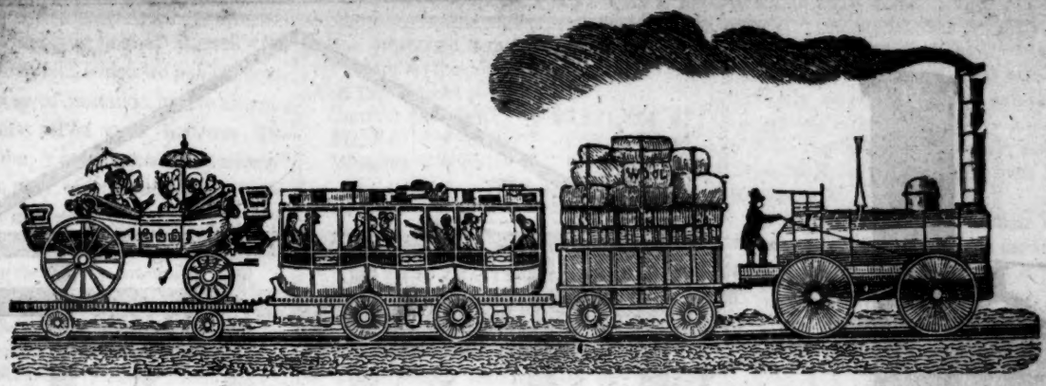


# AMERICAN RAILROAD JOURNAL,
## AND ADVOCATE OF INTERNAL IMPROVEMENTS.

PUBLISHED WEEKLY, AT NO. 132 NASSAU STREET, NEW-YORK, AT FIVE DOLLARS PER ANNUM, PAYABLE IN ADVANCE

D. K MINOR, and GEORGE C. SCHAEFFER, } EDITORS AND PROPRIETORS.] SATURDAY, FEBRUARY 11, 1837. [VOLUME VI—No. 6.


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AMERICAN RAILROAD JOURNAL.

NEW-YORK, FEBRUARY 11, 1837.


LIST OF SUBSCRIBERS to the **Railroad Journal.** that have paid, (continued.)

| | | |
|---|---|---|
| Wm. Creighton, | city N. Y., | July 1, 1837 |
| A. Brocklebank, | " " | Aug. 15, 1837 |
| O. Eddy, Ithica, | " | Nov. 11, 1837 |
| P. Hastie. Hamilton, | " | Jan. 1, 1838 |
| S. C. Ruggles, Goshen, | " " | 1838 |
| L. Williams, Auburn, | " " | 1838 |
| Hon. Stephen White, Boston, Ms., | " | 1838 |
| Saml. Ashburner, | " " " | 1838 |
| J. Archibald, Carbondale, Pa., | " | 1837 |
| E. K. Wiley, Springfield, Ill., | " | 1837 |
| G. M. Totten, Warrenton, N. C. | " | 1838 |
| C. W. Wever, Baltimore, M. D., | " | 1838 |
| S. E. Mercer, Crawfordsville, Ga., | " | 1838 |
| Arch Duke John, of Austria, | " | 1838 |
| Jas. Greenleaf, Washington, D. C., | | Aug. 15, 1837. |

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We understand that the Charleston and Cincinnati Railroad Company have appointed Maj. W. G. M'Neil, Chief Engineer of their Road.

We consider this appointment a guarantee for the prompt construction of this work, the greatest in the world.

### AVERY'S ROTARY ENGINE.

The constant applications from all parts of the country, for information in relation to this wonderful machine, induces us to give such facts in relation to it as come within our knowledge.

The following letter signed by four gentlemen, of the highest respectability and intelligence, residing at *Ithaca*, Tompkins county, N. Y., gives the facts and impressions of a short visit to a saw-mill, erected by ABRAHAM BELL, Esq., of Jersey City, and SETH GEER, Esq., of this city, in the midst of a *Pine forest*, in Tompkins county, eleven miles from *Ithaca*.

The accompanying cut is a fair representation of the mill referred to, with the exception of the mode of driving the saws. In the mill of Messrs. Bell and Geer, the saws are driven by a drum to *each saw*, but in this cut, there is but one drum, and the saws are driven by the *walking beam*, as will be seen on referring to the description.

ITHACA, N. Y. Dec. 13, 1836.

To D. K. MINOR,

SIR,—In compliance with your request, we cheerfully give you our views and opinions of the performance of Seth Geer and Abraham Bell's saw-mill, driven by "*Avery's Rotary Engine*," situated in the town of Enfield, Tompkins county, N. Y.

The simplicity of the Engine, and consequently the ease and facility with which it can be managed by persons of ordinary intelligence, and who would be wholly incompetent to work a piston engine, first excited our attention; and upon a careful examination of the machine, elicited our united applause. It is unnecessary for us to give an elaborate description of the Engine, which is estimated at 20 horse power.

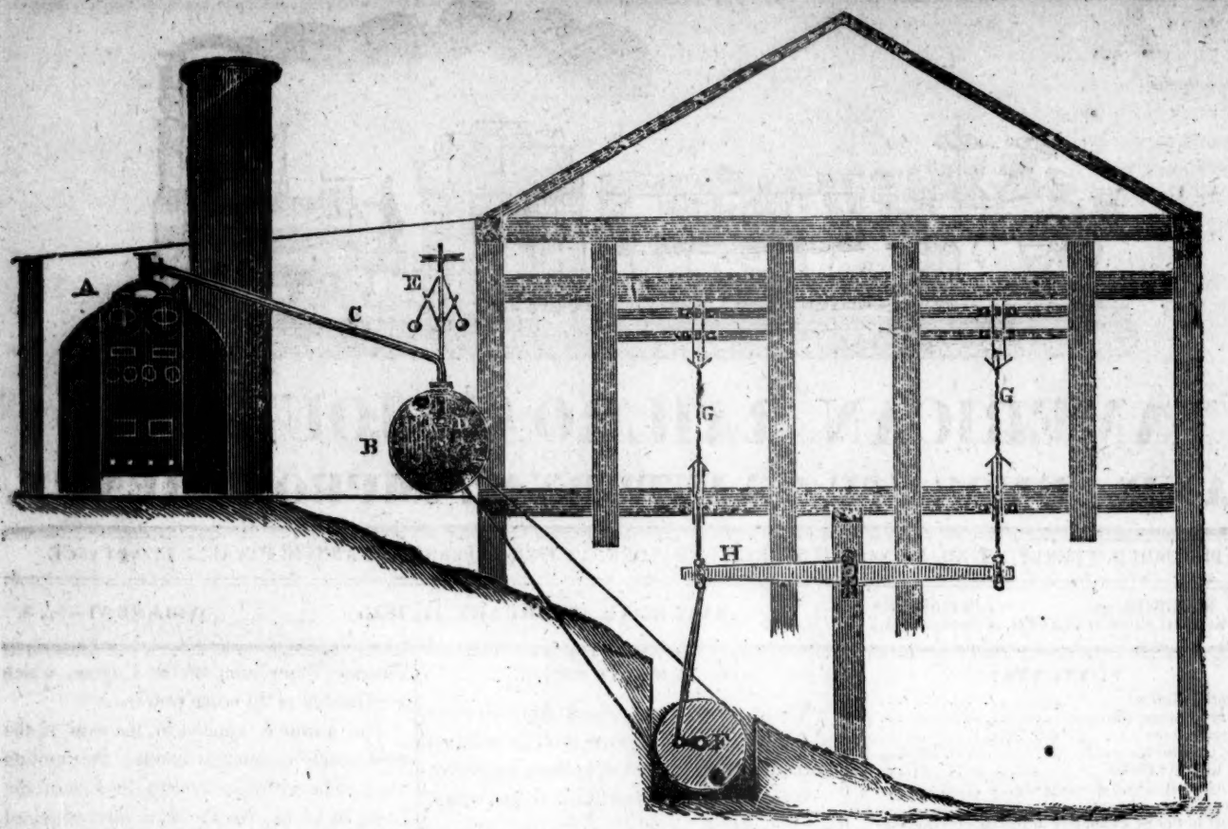
The power is applied to the saw in the most simple manner by bands; the motion being reduced by increasing the size of the drum, so as to give the saw any required velocity. The saw that we examined made 220 strokes in a minute, sawing three boards from a log 12 feet long and 2 feet in diameter, in nine minutes, or cutting at the rate of over 11,50 feet per day, if it could be kept in constant motion—but allowing one half the time to be lost in running the carriage back and adjusting the logs, it would cut from 5 to 6 thousand feet of lumber per day. The mill was arranged for 2 saws, which the workmen assured us they usually kept constantly at work; but the hand to one of the rag-wheels having been sent to the shop to be repaired, we witnessed the performance of but one saw. The workmen told us that the power was sufficient for both saws.

The plan for confining the saw without a saw-gate, was, as we were informed, invented by Mr. Mooley, and appeared to answer the purpose well.

It is with pleasure that we assure you, Sir, that we were highly gratified with the whole performance, and with the utmost confidence, recommend *Avery's Rotary Engine* as a moving power for saw-mills.

Respectfully,
Your most obedient, &c.,
GEORGE MCCORMICK,
J. J. SPEED, Jr.,
HENRY ACKLEY,
HENRY INGERSOLL.

The cut represents a saw-mill with two saws driven by a ROTARY ENGINE. There may be two *gangs* as well as two *saws*.—




A represents the boiler; B the engine; C the steam-pipe; D the shaft, into the *end*, or *side*, of which the steam passes from the boiler, through the pipe C; E the governor, which regulates the passage of steam; F the drum around which the driving band passes from the pully on the end of the shaft D. On the end of this drum is a crank for driving the walking-beam H, to each end of which is attached one or *more* saws, as at G, G.

This mill is represented as situated on a side hill, and the drum placed in a pit under the mill.

An *Engine* of this description, without boilers and machinery, to drive *two* saw gates can be furnished for six hundred dollars,—and the boilers, pumps, furnace irons, and fire bars; governor, and *all* the *necessary machinery* up to, and *including* the walking-beam, or drums, for *fifteen* to *seventeen* hundred dollars; or 2,100 to 2,300 dollars for the whole machinery up to the saw, and the same for *one* saw gate will be fifteen to sixteen hundred dollars, delivered at the shop of E. Lynds & Son, Syracuse, Onondaga County, or at the "*Novelty Works*," in this city, by application to Mr. Joseph Curtis, 132 Nassau-street.

The power of this engine will be ample to drive 1 saw in 1 gate, and *three* or *four* in the other—or to drive *two* saws in the single mill, or mill with one gate.

Since writing the above, we have been furnished with the following statements, from gentlemen who fully understand the subject.

The first is from Henry Seymour, Esq., late—and from the commencement of the Erie Canal—one of the acting Canal Commissioners. Mr. Seymour is himself the owner of a Saw-mill of the ordinary kind, and he fully understands what a saw-mill should do.

The other is from the owners and millers of the new Grist Mill erected in Cayuga County, N. Y., in relation to which we recently published a letter from Mr. Avery.

These certificates are from gentlemen who understand the subject, and they may be relied upon.

Syracuse Jan. 31, 1837,

To Elam Lynds, Esq.

Ddar Sir,—I saw to-day the saw-mill in Cicero, which is propelled by one of Avery's Rotary Engines. While I was present, the saw cut a hemlock log of about two feet diameter with ease and rapidity, and appeared to have power sufficient to accomplish much more. The work was well done, and I was well pleased with the power and performance of the engine in all respects.

Yours very respectfully,

Henry Seymour.

Cato, Cayuga Co. N. Y.
Jauuary 25th, 1837.

We the subscribers, owners of the Steam Grist Mill at this place, do certify, that the Rotary Engine, that drives our mill, is one of Avery's Engines, and manufactured by Messrs. Elam Lynds & Son, and is in our opinion, the best steam power for a grist mill that can be had. It gives us perfect satisfaction, and we cheerfully give this certificate.

The grinding we do is for customers, in grists of from one to ten bushels, and of all kinds of grain, so that we are unable to say how much we could grind in a given time, but this we can say, that the Engine will drive the stones to grind all the grain that any mill can grind with three run of stones, which is the number we have. We have never been able to ascertain the amount of fuel we should require if we were grinding for flouring, or indeed for our present use; but of this we are confident, that with good wood, we could grind more than 100 bushels with a cord of wood. We do not use the full power of the Engine, and it is believed by us and others, that the Engine would drive two run more if we had them, and do good business with the five running at once, without any addition to the Engine or Boiler.

B. Conger.
Henry Furman.

We the subscribers, Millers, tending the above mill, fully agree with the above certificate-

P. D. Livingston,
David Corp.

---

### ILLINOIS INTERNAL IMPROVEMENTS.

The enterprize and liberal views of the citizens of Chicago, evinced by the pro-

ceedings of a meeting held at Russell's Saloon on the 18th ult., which we publish herewith, are worthy of imitation by the cittzens of NEW-YORK. The aged matrons who claims to be the "commercial emporiums" of the UNION, may well take lessons of wisdom from the course of this infant Hercules of the West.

From the Chicago American.

INTERNAL IMPROVEMENT MEETING.

Pursuant to public notice, a large and respectable meeting of the citizens of Chicago was held at Russell's Saloon, Monday evening January 18th, to take into consideration the propriety of recommending to the Legislature, the adoption of measures for the speedy construction of the great Central Railroad, and the organization of a general system of internal improvement, in this State.

On motion, Wm. H. Brown, Esq., was called to the chair, and Wm. Stuart appointed Secretary.

On motion of Francis Peyton, Esq., who stated the objects of the meeting, a Committee of five were appointed by the Chair, consisting of F. Peyton, J. N. Balestier, John H. Kinsie, Esqrs., and Col. E. D. Taylor, and Capt. J. B. F. Russell, to report resolutions, expressive of the sense of the meeting; and thereupon, F. Peyton, Esq., from the Committee, presented the following, viz:

Whereas it is the interest of the northern parts of the State of Illinois to give a hearty support to all measures of public improvement, projected for the benefit of any part of said State, and whereas a lively interest prevails in this section of country, in favor of the immediate construction of the great Central Railroad, and a general system of improvement, therefore,

*Resolved*, That we approve of the law of the last session of the Legislature, adopting a Central Railroad, and feel a lively interest in the completion of said road, and that our representatives be instructed to support such measures as may be necessary to carry into effect that law.

*Resolved*, That we also approve of a general system of Internal Improvement, the benefits of which shall be felt in all parts of the State, and do most heartily tender our co-operation in support of the same.

*Resolved*, That our Senator and Representatives be instructed to use all honorable means to effect the objects contemplated by the above resolutions.

*Resolved*, That these proceedings be signed by the Chairman and Secretary, and published in the papers of the town, and that copies be sent to our Senator and Representatives, to be laid before the Legislature.

Which were read and in full adopted.

On motion, adjourned.

WM. H. BROWN, Chairman.
WM. STUART, Secretary.

---

ILLINOIS AND MICHIGAN CANAL.—We have received from *Hon. P. Pruyne* the Annual Report of the Canal Commissioners, with the accompanying documents, the publication of which, from their great length we are compelled to postpone till our next. In the meantime it may be well to present to our readers the following estimate taken from the Report:—

| | | |
|---|---|---|
| Summit Division, | $5,871,324 | 97 |
| Middle " | 1,510,957 | 46 |
| Western " | 1,272.055 | 08 |

[Chicago American.]

---

From the West Chester Village Record.

WEST CHESTER RAILROAD.

At an annual meeting of the stockholders of the West Chester Railroad Company, held pursuant to public notice, in the city of Philadelphia, on the 16th day of January, 1837, Dr. M. C. SHALLCROSS, was called to the Chair, and Dr. P. M. PRICE, appointed Secretary.

The President of the Company submitted the following Report, which was read, and upon motion of E. Chauncey, approved, and ordered to be printed.

SIXTH ANNUAL REPORT OF THE WEST CHESTER RAILROAD COMPANY.

This is the time fixed upon by the charter, at which the President and Directors of said Company, are directed to exhibit to the stockholders a statement of the affairs and proceedings for the last year.

The beginning of the year, and nearly three months of it, was very inauspicious for all kinds of travelling on our Railroad, and frequently it was rendered impassable by the violent and unusual snow storms, and consequently our expenses were considerably increased in proportion to the receipts—but notwithstanding these impediments, the business upon the road has been more productive for the last than the previous year.

The line of burthen cars, with their horses, belonging to the Company, were in May last, sold to Messrs. James and Darlington, who continue to run the line upon the road.

| | | |
|---|---|---|
| The receipts for passengers, the last year, amount to | $14,146 | 45 |
| Do. for tolls, rent, freight, &c. to the sum of | 5,203 | 35 |
| Making altogether the sum of | $19,349 | 80 |
| Expenses, including tolls to the State, interest on loans, repairs to road, &c. | 16,159 | 47 |
| Leaving a balance of | $3,190 | 33 |

nearly the whole of which balance has been derived from the carrying of passengers for the last six months: upwards of nine thousand eight hundred passengers have been carried in and upon our cars, to and from Philadelphia to West Chester, in the last half year.

The following statement shows the amount of transportation of Merchandize, &c.; on the road during the last year:

| | |
|---|---|
| Passed Eastward towards the City, | 658 tons. |
| Do. Westward from do. | 1026 tons |
| Making | 1684 tons. |
| Passed on and over the Branch road to West Chester, of lime, marble, lumber, &c. | 1643 tons. |

The final results of the operations of the Company for the past year are more particularly referred to and exhibited in the Treasurer's report, hereunto annexed.

The capabilities of the railroad had never been fairly tested upon its own basis until the last half year.

In its first trial a connection with other Western lines became necessary on account of the railroad Bridge at Schuylkill being unfinished, and common stages required to get from the inclined plane into the City.

On the first of July, 1836, the Company took the passenger business into their own hands; since then they have had a trial of what they can accomplish on their own exclusive footing; and the result has proved the absence of any extraordinary occurrence or accident, the road and business of the company may be made to yield a fair profit on the capital invested.

It is true the profits realized have not been divided among the Stockholders, but the investments made of them cannot fail to be more advantageous to them in the future returns to be realized.

A stable seemed a necessary appendage to the Hotel which had been erected on Broad street, and if neglected for a few years, the rapid increase of buildings would have, deprived them of the opportunity of securing a vacant lot for its erection.

It had long been a subject of complaint that passengers were set down at a distance from the town of West Chester, and subjected to the inconvenience of walking in all kinds of weather to their houses or stopping places. It was therefore indispensible to the proper accommodation of the public, that the railroad should be extended into the built part of the town where it now terminates, under a neat and conveniently constructed Car house, with offices in front.

These may properly be paid for at a more favorable period of the money market, by a loan for the amount expended, and the profits of the company distributed as a dividend among the Stockholders.

Having accomplished these important and necessary improvements, the Company foresee no further occasion for investments of a permanent nature, until the business of the Hotel in Broad street, may make an extension of it by back buildings necessary, and a suitable return therefor certain.

Believing that they have now arrived at a period when the railroad will yield a return equal to the ordinary rate of interest, the Directors cannot but feel themselves authorized to look to the future, with the confidence that the stockholders will have a permanent basis for a similar income; besides the reasonable expectation of profit afforded by the increased accommodations to the public, the greater rapidity of travelling under the arrangement established for the last half year; and the natural increase of business, from all the new branches of trade and industry connected with it, and the extension of the population, business and prosperity of West Chester and of Chester county.

In this respect, the Directors notice with

particular pleasure, not only as it concerns the profits of the Company, but the interests of the public and the character of the place, the highly prosperous condition of all the schools for learning in the Borough of West Chester; and they cannot repress the wish that these, and the scientific Lectures and associations so happily commenced, may always continue to distinguish and attract the public regard to that Borough. However humbly the railroad may subserve the surrounding prosperity, whether it be to convey the scholars to the schools, merchandize to the storekeeper, the produce of the farmer to market, or the building materials for the extension of the town, the stockholders must derive a prospective advantage in the general improvement, greatly exceeding in value the momentary compensation for the transit their railways afford

(Attest,) ZIBA PYLE, President.
WM. WILLIAMSON, Secretary.

—

TREASURER'S REPORT.

STATEMENT OF THE ACCOUNTS OF THE WEST CHESTER RAILROAD COMPANY, FOR THE YEAR 1836.

DR.

| | |
|---|---|
| To Capital Stock, paid in | $109,925 00 |
| Receipts for tolls, passengers, freight, rents, dividends on Bank Stock, &c. | 19,349 80 |
| | $129,274 80 |

CR.

| | |
|---|---|
| By Cash paid for construction of road, buildings, cars, horses, &c. | 109,556 46 |
| Balance of Capital unexpended | 368 53 |
| Balance due at last statement, | 392 83 |
| Cash paid, expenses for salaries to agents, repairs, keeping horses, tolls paid to State, interest upon loans, &c. | 15,766 64 |
| Balance, being profits, | 3,190 33 |
| | 129,274 80 |

TREASURER IN ACCOUNT WITH THE DEPOT IN THE CITY OF PHILADELPHIA.

DR.

| | |
|---|---|
| To amount of Loan | 29,000 00 |
| Balance due Treasurer, | 2,489 18 |
| | 31,489 18 |

CR.

| | |
|---|---|
| By Cash paid on account of Depot, | 31,489 18 |

All which is respectfully submitted,
WM. WILLIAMSON, Treasurer.
January 5, 1837.

—

On motion, Resolved, That the Chairman and Secretary act as judges of the election now to be held for Directors of the Company for the ensuing year.

Upon counting the votes, it appeared that the following named persons had each received 1146 votes, being the whole number given, viz:—Ziba Pyle, Jonathan Valentine, Algernon S. Roberts, Coleman Fisher, Eli K. Price, William H. Dillingham, and William P. Sharpless, who were thereupon declared duly elected Directors of the Company for one year.

M. C. SHALLCROSS, Chairman.
PHILIP M. PRICE, Secretary.

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The following damages awarded to the seamen injured last summer on the Boston and Providence Railroad, will prove a precedent in all similar cases.

The liability of the Company in all cases of accident, arising from carelessness of their agents, is just, and it will be found beneficial to Railroad Companies, that such a decision has been made.

The property of the road will suffer much less in the hands of careful and judicious men, than when entrusted to those who know no more of the business than a quack doctor does of anatomy.

The slight increase of expense in selecting and recompensing suitable persons, will bear no comparison with the final gain, in safety and diminished wear and tear upon the road.

THE RAILROAD CASES.—The case of James Thompson, vs. the Boston and Providence Railroad Corporation, the trial of which commenced in the Supreme Judicial Court last week, has been going on from day to day, until yesterday evening, when it was brought to a close. The plaintiff was one of the United States seamen who were in the forward car of the train on the Providence Railroad, on the 29th of June last, and suffered injury from the collission between that train and the Dedham train going from Boston towards Providence. There were five other suits brought by the other seamen who sustained injury at the same time; and since the commencement of the trial, it has been agreed by the counsel of the respective parties, that they should all be submitted to the same jury, as they all rest upon the same ground, and depended upon the same evidence, with the exception of the nature of the injury suffered by each, respecting which additional testimony was given. A great mass of testimony has been given in the trial, and as the case is novel in its character, and important to the parties, it has undergone a most thorough investigation by the learned and able counsel, both for presenting a full view of the facts, and for applying correctly the principles of the law. The case was summed up yesterday afternoon in a most lucid and satisfactory manner, by Chief Justice Shaw, and delivered to the jury. They were instructed, in case they should decide against the defendants, to award, not vindictive damages, but a reasonable remuneration, under the circumstances of the case, for the injury sustained by each of the six plaintiffs.

[Adv.]

At the opening of the Court, yesterday morning, the Jury returned a verdict for the Plaintiffs and awarded to each the sums following:—

| | |
|---|---|
| James Thompson, | $2250 00 |
| Joshua Howell, | 3000 00 |
| Thomas Murdock, | 2250 00 |
| Charles W. White, | 1500 00 |
| John A. Russ, | 2000 00 |
| John B. Cummins, | 175 00 |
| Benjamin Ranson, | 175 00 |
| | $11,350 00 |

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From the St. Thomas (U. C.) Liberal.

IMPORTANT RAILROAD MEETING.

TUESDAY, Jan. 3, 1837.

A meeting of the Directors of the Niagara and Detroit Rivers Railroad Company, took place this day in the city of Toronto, at 11 o'clock, A. M., pursuant to notice from John Prince, Esq., President of the Board. In consequence of Mr. Prince's attendance being at that time required in the House of Assembly, the Board adjourned to six o'clock, P. M., at which time they met at the "Ontario House," when there were present—

Mr. Prince, President,
Mr. Hamilton,
Mr. Shaw,
Mr. Johnson,
Mr. Caldwell,
Mr. Lewis,
Mr. Haggart, and
Mr. Mercer, as proxy for
Mr. Brush, and
Mr. Cahon,

Mr. Cadwell and Mr. Haggart (not being present at the former meeting) were sworn in as Directors, in compliance with the 22d section of the Charter.

The amount of instalments paid in, being reported by the several Directors, and all being unanimous as to the expediency of commencing immediately, a survey of the route, it was moved by Mr. Shaw, seconded by Col. Hamilton, and carried—

*Resolved*, That Mr. Mercer, be authorized by the Board, to proceed to the United States for the purpose of employing a competent Engineer, to make the surveys for the Niagara and Detroit Rivers Railroad; and that he proceed forthwith to Judge Wright, and take his opinion as to the most competent person to be employed; and if he cannot obtain from Judge Wright the recommendation of a competent and celebrated Engineer, then, that he be authorized to employ the best one that he can get; and that the President be hereby authorized to clothe him with full authority to carry this Resolution into effect.

*Resolved*, That the Directors of the Niagara and Detroit Rivers Railroad Company, meet the Parliamentary Committee on a "Great Western Railroad," (as proposed,) at half-past nine in the Committee Room of the House of Assembly.

WEDNESDAY, Jan. 4.

A conference having taken place in the Committee Room of the Assembly, by appointment, with the Chairman, and several of the Select Committee of the House of Assembly, on the "Great Western Railroad," mentioned in the Lieutenant Governor's

Speech, at the opening of the present Session, and also with the President and some of the Directors of the London and Gore Railroad Company, it was

*Resolved*, Unanimously, (by the President and Directors of the Niagara and Detroit Rivers Railroad Company,) that it would be inexpedient and impolitic in us, under existing circumstances, to agree to form an union or junction with either of the above roads.

*Resolved*, That this Board do adjourn till nine o'clock A. M., to-morrow.

THURSDAY, Jan. 5.

The Directors met pursuant to adjournment in the Committee Room, when the following Resolutions were passed:

*Resolved*, That our President, John Prince Esq., M. P. P., be requested to present a petition to the House of Assembly in the name of the President and Directors of the Niagara and Detroit Rivers Railroad Company, praying for the loan of a sum of money (not less than one hundred thousand pounds) to aid in erecting the said road; the tolls of the road to be pledged to the repayment of the said loan, with interest.

The petition was drawn up, and signed accordingly.

*Resolved*, That no amendment of the Act be applied for, during the present session.

*Resolved*, That the President do forthwith issue Scrip to the persons who have paid up the first instalment on their respective shares.

JOHN PRINCE, President.

*Resolved*, That the thanks of the Board be given to our President, for his zeal and ability in advancing the interests of the Company.

JOHN TALBOT, Secretary.

—

DETROIT, Dec. 5, 1836.

MY DEAR SIR,—Your friends Messrs. Mercer and Gardiner, have shown me your letter to the latter, in which you advert to Gov. Head's project of a Great Western Railroad through Upper Canada.

Taking it for granted, that this is not a question of "distribution of the surplus revenue." I presume the suggestion involves considerations, affecting, not only, the geographical eligibility of the route, but such, also, as relate to the probability of inducing individual enterprize to aid in the construction of the work, to its productiveness, when finished, and to its subservience to the purposes of general *uninterrupted* intercourse, for the public by which it is to be sustained.

It is sufficiently obvious, and well enough understood, I believe, that the choice of route is confined to two. One from the head of Lake Ontario, to the foot of Lake Huron. The other from Black Rock, to Sandwich or Detroit. If the principles above suggested, are to have any application in these cases, then it becomes necessary to put you in possession of facts with which it would be unreasonable to suppose you acquainted. I desire to premise, however, that I am not writing a treatise upon Railroads. I am but presenting at the instance of mutual friends, a hasty and undigested sketch, which, if it answer the use of a statistic memorandum will accomplish all I propose. I add also that when I use round numbers, they result from the *omision*, not the *addition* of fractions; and that the sources of my information; are, the Warehouses the Custom Houses, the Stage proprietors, the Ferry Masters.

*Thirty steamboats of the first and second classes*, ply between this and Buffalo. Of the first class, two arrive and depart daily; and of the second class one. The former, average *two hundred passengers each, each way*; the latter 60. The former average *fifty tons freight*, each, arriving; *the latter twenty*.

One hundred and fifty vessels are employed. Of these an average of three arrive and depart daily, averaging *each, each way*, ten passengers, and *averaging one hundred tons freight each*. The exports I have omitted to ascertain. It would require more leisure than I can conveniently bestow.

An average of *two hundred wagons, one hundred and fifty pair horses, two hundred pair oxen, and eight hundred persons*, with their moveables, are crossed per month, at the Detroit Ferry, having come up through Canada. The receipts at the Ferry *have doubled* since the last year.

These averages are calculated for *the seven months of the year* during which this state of things continues.

The receipts at the Western Stages Office since the 1st of March last, have *been* $90,000. Whether those have been created by all manner of other requisitions, ranging from a big double waggon, to a little French Poney, and in default of that, the substratum of a pair of double soled cowhides i would be impossible for me to say.

Calculate these data for two hundred days, which is less than seven months, and you have

| | |
|---|---|
| 1000 persons arrival and departure, daily, or . | 200,000 |
| 400 tons freight import, or | 80,000 |

This is exclusive of the transportation of property by the Ferry, and that of persons and property, by Eastern Stages and the small Steamboats in connection not enumerated in the preceding estimate.

Taking a glance now at the Map. Directly east of this, on the sea board at Boston begins a Railroad, partly in operation; partly in process of construction, and all chartered, running through the centre of Massachusetts, and New-York directly to Buffalo; of this, one hundred and forty miles are completed. Passing over the interruption of Canada the line is taken up again at Detroit, and carried to near the head of Lake Michigan,—and of this the first will be completed next July. From the head of Lake Michigan the country presents a perfectly flat surface westwardly to the valley of Rock River, emptying into the Mississippi. Into the line from Boston to Buffalo, tributaries are made or *making* from Rhode Island, Connecticut, New-Hampshire, Vermont, New-Jersey, and Pennsylvania, and a branch at Buffalo diverts to itself, the great New-York and Erie Railroad.

Compare, then, under these circumstances the relative advantages of these two routes through Canada.

Of the geographical features of the southern route it is unnecessary for me to speak. You are sufficiently familiar with them. A level ridge peculiarly adapted by its uniformity of surface, and the character of its soil, to the economical construction of such a work; it presents, in addition, in the absence of any expense for the land, and in the abundance of timber upon its borders, facilities, unsurpassed, for such an object, anywhere.

The aid it will invite may be judged of, from its position, lying as it does, between the terminating points of two extensive lines now in process of construction. The flow and ebb of population will force a channel through for itself. The natural progress of things will build it, and as a rival to anything else, it will exhibit one of those formidable oppositions, that end in becoming the administration itself. The distributive shares of Michigan, in the surplus revenue, is more than half a million of dollars, intended to be appropriated to internal improvements. Of these, none is more important to her than the Detroit and St. Joseph's Railroad—and the moment the company is relieved from this undertaking, they design to transfer their capital and enterprize to the construction of the Niagara and Detroit Rivers Railroad.—Buffalo and Detroit can never suffer such a project to sleep.

As regards its productiveness, it is sufficiently indicated by the fact I have given you. Superadd to this, that its charter is perpetual; that it is in the direct line to avoid the water, and therefore, neither liable to be cut off or interfered with, by shortening lines, nor interrupted by five months of winter; absorbing the intercourse from the sea board to the Mississippi; and you have the promise of a steadily increasing value of stock, such as is not to be found elsewhere, within my knowledge.

Shall I ask, whether it would be better for the people of Canada to become participants in, or the owners of this stocks, or whether they had better carry a line of Road from Hamilton to Fort Gratiot, having upon one side of it, half the time a frozen Lake, and on the other for the present a comparative wilderness. If New-York with its dense population and the capital of its cities, is so long in making the Hudson and Lake Erie; if Detroit a 100 years old, with its enterprize and wealth combining with the southern part of Michigan which comprises the mass of its population, finds it so laborious an undertaking to reach Lake Michigan, when, I would like to know, will that Railroad be built which is to continue the Canada Road from River St. Clair to Lake Michigan upon the 43d parallel of latitude? And when it reaches the Lake, how, for half the time will they get over it? I saw a paper the other day, published at Palmer, the County seat of St. Clair, glorifying in the idea that the Camden Road was to terminate there and remarking in a sort of parenthesis, that the extension of the Palmer and Romeo Railroad (which is not built yet) would carry it across the Peninsula. And even if that were done (I mean the first section of the Romeo Road) which is not yet begun, do you know, that the *western* extremity of the *proposed* road, which is Romeo, is east of the eastern beginning of the District Road?

But you must be tired. If you are not I am sure I am, so we shall both be gainers, if I stop this long yarn.

My friend Mr. Oliver Newberry, than whom Michigan has no more enterprizing

citizen, nor any whose business relations are more extended, will corroborate the statements and views of this letter. I am, very dear sir,

Your friend,

(Signed) E. A. BRUSH.

I concur in the facts and views expressed in the foregoing letter.

(Signed) OLIVER NEWBERRY.

JOHN PRINCE, Esq., M. P. P. Toronto.

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From the St. Louis Commercial Bulletin.

INTERNAL IMPROVEMENTS.—We publish to-day the Report made by Mr. W. B. GUION, Civil Engineer, of his reconnoissance for a Railroad route from Louisiana, in this State, on the Upper Mississippi River, to Columbia, a distance of about 85 miles; also, that of Mr. ERSKINE STANBURY, Civil Engineer, of a route from Fayette, to this city, both of which we consider of interest to the people of Missouri. We are sorry to find, that the Report of the latter developes a state of facts calculated to preclude all hope of constructing a railroad to connect the north-western portion of our State with this place, until the necessities of the country demand, and the resources of the State be equal to, the undertaking, which does not, at present appear to exist, nor likely to do so for some time to come.

It has always appeared to us, not only more practicable, but of more importance to St. Louis, and the prosperity of the State generally, to construct a railroad from this, in a south-western course, or in the direction of the Iron Mountain, mineral and pine region, lying between the Merrimack and the heads of the St. Francis river.

A road constructed in that direction would immediately develope the great mineral wealth for which Missouri is so famed, and which could not be brought into usefulness and profit hitherto, in consequence of its remoteness from a means of transportation to a fair and profitable market, St. Louis, the State, yes, the adjoining States and Territories, need all the products of the mines and forests of that region, in order to advance its interests, and administer to the comfort of the inhabitants.

The increased demand for iron alone, has in the last two years raised the price from 50 to 100 per cent. and being an article of absolute necessity, it becomes a matter of importance to the statesman and economist to inquire into the propriety of adopting a system calculated to bring into use our own resources in the manufacture of the inexhaustible beds of ore, instead of paying tribute to other States for an article evidently inferior in quality

The same may be said in regard to lumber; we are daily paying extravagant prices for this article, brought from the Ohio river, and of inferior quality to that produced from the pine forests of our own State.

The lead also produced from that region, to say nothing of copper, zinc and tin, would be manufactured and brought into market by means of a railroad, and render Missouri within herself, the most independent of all the States, and St. Louis the greatest workshop and emporium of manufactured articles of all the cities of the Union.

The system proposed by the committee on Internal Improvement in our Legislature we conceive to be a magnificent scheme, and if carried out, will add to the wealth and prosperity of our State, to the honor of our Governor, and those who may have assisted in devising the plan.

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REPORT OF THE CIVIL ENGINEER, ON A PROJECTED RAILROAD, FROM LOUISIANA TO COLUMBIA, IN THIS STATE.

ST. LOUIS, 1st December, 1836.

A. B. CHAMBERS, WILLIAM CORNELIUS, Esqrs., and others; Committee for the people of Pike and Broome Counties.

GENTLEMEN: In obedience to instructions from the War Department, directing me to make such an examination of the projected railroad from Louisiana to Columbia as the persons interested in it might desire, I repaired to Louisiana in the month of September last, and then reported to A. B. Chambers, Esq., the Chairman of the committee for the citizens of Pike county, by whom and I. Herrick, Esq., I was furnished all the information necessary to enable me to perform this duty. Having completed a reconnoisance and survey of the route, and knowing your anxiety to present to the Legislature of the State now in session, some of the results of these examinations, I have the honor to offer you such a report as the little time which a necessary attention to other duties in a neighboring State leaves at my disposal of this object. It is of necessity general, and the calculations it embodies only proximate; but I trust it is so nearly exact that you may be safely guided by it in your future action upon the subject

Although the country traversed by this survey is well known to you, it may not be improper to glance at its general character in illustration of the facilities and impediments to be encountered in the progress of such a work. By a glance at the map of the State it will be perceived, that the peninsula formed by the junction of the Missouri with the Mississippi, is intersected by numerous streams, the tributaries of these rivers, running across the direct line from Louisiana to Columbia. These streams are formed by the junction of a great number of small branches the vallies of which are generally deep, and often present separately, obstacles as formidable to the passage of a road across them as does the principal stream below the point of their union. The great plain drained by these water-courses which is first surmounted, in the direction of the road, at Bowling Green, at an elevation of four hundred and forty-four feet above high water mark on the Mississippi, presents generally a surface remarkably smooth, but undulating from the above stated altitude, to that of about two hundred feet. A large portion of it is prairie, of a rich and fertile character, while the banks of the numerous streams intersecting it, afford a variety of woods of a quality suitable for railroads, and sufficient for all the purposes of husbandry.—Casting the eye over the map of this region we trace a broad and continuous ridge between the waters of the Missouri and Mississippi. This ridge is called the Grand Prairie, and shoots out from its principal stem, branches on either side, very nearly to the banks of those great rivers. One of these branches, or "arms of prairie," as they are familiarly termed, passing around the heads of the river Au Cuivre, reaches quite to Bowling Green—while another, in part prairie and in part wooded, leads around the head of Hinkson's Creek to Columbia. As this ridge is smooth and generally nearly level, it might be supposed to offer the best route for the proposed road; but for considerations which I shall enumerate, I preferred rather to adopt, in the preliminary survey, a route nearly coincident with the straight line to Columbia, and only deviating from it to obtain easy crossings of the streams. Were the road constructed on the ridge just indicated, there is more than a reasonable apprehension, that water to supply locomotive steam engines, at proper intervals, could not be obtained; nor would supplies of fuel be conveniently procured. But besides these objections, the road would pass through a tract of country uninhabited, and uninhabitable—being flat, wet, and without wood—whence no profitable return could be received by the proprietors for their large expenditure of money. The route surveyed is 85 miles in length, being but a few miles longer than the straight line between the extremities, and in the greater part of the way, offering a surface well adapted to the construction of a railroad, in view both of the cheapness of its construction, and the facility of transportation upon it.

From Louisiana, the line pursues the valley of Noix Creek, ascending nine miles at rates varying from fifteen to forty feet per mile—whence to the Court House in Bowling Green, there is an abrupt ascent of about two hundred and forty feet, in one mile and a half. To surmount this great height, locomotive power would be quite competent, at a diminished speed, when the rails were in a favorable condition, at which time an engine weighing eight and a half tons, of power equal to such as are in use on the Baltimore and Washington railroad, would ascend this plane at the rate of about three miles an hour, with a train of one hundred tons gross, or about seventy tons of goods. But it remains to be proved by experience, that in the worst state of the road, a locomotive engine would have sufficient ractive power to overcome ascents much above one hundred feet per mile. Again, this difficulty may be overcome by stationary power, either of steam or horses, kept in readiness to assist in drawing the trains up the plane. And lastly, future surveys may point out the means of forming a more easy and suitable grade. But the solution of this difficulty is dependent upon so many considerations, of cost, speed, and capacity for transportation, that I leave it to the future, with the mere statement of the means by which it may with certainty, be accomplished. Leaving Bowling Green,

the line surveyed, passing by Major Davis' and Jeremiah Morris', crosses Indian Creek a branch of the Au Cuivre, just below the "forks," and a little above Vanney's mill; thence gently ascending to the prairie, it crosses Prairie Fork at the ford of the Indian road, continues in direct line to the west fork of the Au Cuivre, near its junction with Hickory Fork, and passing it, ascends Lost Fork to a level prairie, that is pursued about fourteen miles, on a surface graded as it were by the hand of nature, avoiding Boon Creek, and all the branches of the Loutre. Leaving this prairie the line crosses the south fork of Salt River, about three miles from its source, and ascending Beaver Dam Creek, regains the prairie about half a mile north of James Harrison's house.—This prairie is the highest ground passed over on the route, being four hundred and fifty-nine feet above the plane of reference. From Harrison's the route was continued over the Grand Prairie, around the head waters of the river Aux Vases, to Cedar Creek, which was crossed about a mile below Toneyer's mill. There are three branches of this creek crossed within two miles, but none of them are of much magnitude. From Cedar Creek, the survey was directed towards Hinkson's Creek, which must be reached by a cut of forty or fifty feet deep, through the crest of the intermediate ridge. The point selected for crossing the latter stream, viz: at the widow Redmond's, about half a mile below Crockett's mill, is believed, from personal observation and information derived from others, to be the most favorable for that object, within a distance of eight miles from Columbia. From this point may be had the longest plane by which to ascend the ridge, that bounds the valley of the creek on the west, which is every where abrupt, and here more than one hundred feet high. Having ascended this ridge along the valley of a small branch, that runs down the eastern face of it, through Mr. Mills' farm, the route was prolonged on its crest to the principal street in the town of Columbia, passing between the waters of Hinkson and Bear creeks, in a line generally direct, but a little serpentine, and over a surface slightly undulating.

In conclusion of this general sketch, I will add that of the whole length of the line surveyed, a great part is level, or so nearly so, that at small cost it may be made to conform to grades that will offer but little resistance to the burdens that may be transported upon the road; while there is but one portion, namely, that at Bowling Green, which excites the least doubt of its proper adaptation to locomotives.

Having thus briefly indicated the route adopted for the survey it will be pertinent to remark, that although you desire me, in the letter conveying your wishes on the subject, so to conduct the survey, that the line might be prolonged in the most advantageous way to Rocheport, without sacrificing the interests of Columbia, it was made without any reference to such an extension, in consequence of my ill health at the time I made a reconnoisance of the country, and the necessity of my constant attention afterwards to the party in the field, and because of the failure on the part of the citizens of Rocheport to communicate to me any information in regard to the nature of the country. But notwithstanding, I believe the line may be continued to Rocheport from the point at which it surmounts the ridge on the west of Hinkson's creek, through the vallies of Bear creek and Rocky fork, the latter of which runs into Rocher Perci nearly in direct line to Rocheport, as successfully as by any other route which can be found; for in this region the ridges are so high and the vallies of the principal streams so deep that it is in vain to seek to pass across the latter except by the ravines of the longer branches that lead into them.

MODE OF CONSTRUCTION.

The road being graded to a surface width of sixteen feet in cuttings and fourteen in embankment, the form of superstructure which I would recommend to you for adoption is one which experience has proven efficient, and which, involving the least expenditure of money, pruduce approves as the best until an improved condition of your country and an increase of traffic upon your road shall justify the substitution of more imperishable and costly materials. I propose to you, to form the superstructure of sills or transverse pieces laid at intervals of three feet from centre to centre, and notched at each end to receive the longitudinal or string pieces, the latter having a cross section of five by eight inches, and being plated on the inner edge of the upper surface with iron bars two and a quarter inches broad and five eighths of an inch thick secured to the wood by iron spikes. These dimensions of the rails as well as the nearness of the sills, and nothing less, it is believed will ensure an unyielding surface under the pressure of the efficient but heavy engines now in use, which with a less firm structure might cause by the yielding of the rails, the disruption of the iron bars, besides a great increase of resistance to the transportation upon the road.

*Estimate of Cost.*

| | |
|---|---|
| For grading, entire distance | $242,000 |
| " cleaning and grubbing do. | 21,000 |
| " bridges and culverts do. | 42,000 |
| | 305,000 |
| For a *single mile* of superstructure. | |
| " 42,000 feet of scantling a $15, | $630,00 |
| " 22 tons iron bars a $80, | 1760,00 |
| " 1760 sills a 25 cts. | 440,00 |
| " laying the rails a $2 per rod, | 640,00 |
| " spikes and plates, | 200,00 |
| | 3670,00 |
| Eighty-five miles of a tract a $3570 per mile | 311,950 |
| To which must be added for the necessary turnouts, with their castings | 10,000 |
| | $626,950 |

To these sums must be added the cost of machinery, store-houses, work-shops, etc., but these are so entirely dependent upon the amount of business required to be done by the road, that I omit any statement of it. In conclusion I repeat that this estimate is not offered as an exact one, but rather as the ultimate limit of your expenditures, should you adopt the plan I propose.

The profiles and maps which should accompany this report, for want of time, have not been prepared, but Mr. Erskein Stanbury who with my assistant, Mr. Webster U. S. Assistant Civil Engineer, rendered me efficient aid in the survey, has undertaken to prepare them and furnish you with them in the course of the winter.

Of the benefits which your community and the State at large would derive from the successful issue of your enterprize, it is perhaps superfluous for me to speak. The mere statement of facts is proof sufficient and needs not demonstration to enforce it. Your projected road runs through a region of country rich and fertile in soil, and presenting a pleasant variety of prairie and woodland, the greatest portion of which is yet untilled, because of the difficulty of its communication with a market. That the advantages which it offers would immediately attract thousands to the Stare to swell her population—that the rich beds of bituminous coal which frequently show themselves on the surface, and that mines of metallic ore, of which there are abundant indications in the general metalliferous character of the country and the appearance of fragments on the surface, itself scarcely known—that these great sources of wealth would at once be developed to swell the commerce of the State and enrich her inhabitants so soon as an easy access to market is secured, there cannot be a reasonable doubt. But it is needless to dwell longer upon this topic. I feel assured that the zeal and intelligence of those to whom the fate of the work is intrusted, are such as to insure to it all the support which public policy and private interest demand.

I have the honor to be,
Very respectfully,
Your obedient servant,
W. Burling Guion, U. S.
Civil Engineer.

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REPORT TO THE STOCKHOLDERS OF THE SCHUYLKILL NAVIGATION COMPANY.

The President and Managers, in presenting their customary annual Report, have much pleasure in stating, that no material circumstance has occurred to interrupt the regular progress of the important trade transacted upon the works under their charge, during the past year, and that the affairs or the Company exhibit a degree of prosperity highly gratifying.

The statements herewith submitted as part of this Report, marked B, C, D, show a large and steady increase of the trade, and there appears to be very reasonable probability of its further improvement and continuance.

The principal item of transportation, and from which the Company derives the largest portion of its revenue, is *Anthracite coal*, which, as a fuel, may now be considered an *article of necessity*, although but few years have elapsed since its introduction, and many prejudices to encounter;

yet, from the general preference given to it, no apprehensions are now entertained of overstocking the market. The supply o the past year, by the Schuylkill Navigation alone, has been 432,045 tons, and although this has exceeded the shipments of the proceeding year, 97,173 tons, it has met with a ready demand, and a much larger quantity could have been sold for exportation, had it been brought in season.

The whole quantity of Anthracite coal sent to market by the several canals in 1836, is as follows:

| | | |
|---|---|---|
| By the Schuylkill, | Tons | 432,045 |
| By the Union, | " | 11,709 |
| By the Lehigh, | " | 146,502 |
| By the Delaware and Hudson, | " | 106,270 |
| Making the whole supply, | " | 696,526 |

Being an increase of 134,518 tons beyond the recipts of 1835.

There was likewise brought to market 5,082 tons of Bituminous coal from the Susquehann mines, via. the Union Canal.

The coal is brought to the Schuylkill, by the following Railroads:

| | | |
|---|---|---|
| Danville and Pottsville Railroad, from the Girard mines, | Tons | 13,347 |
| Mount Carbon Railroad, | " | 122,892 |
| Schuylkill Valley Railroad, | " | 55,921 |
| Mill Creek Railroad, | " | 56,583 |
| West Branch Railroad, | " | 115,992 |
| Little Schuylkill Railroad, | " | 35,159 |
| From other sources, | " | 49,890 |
| | Tons | 449,784 |
| Of which there has been sent to market, 432,045 tons, by 9,526 boats; of these 472 discharged their cargoes between Port Carbon and Philadelphia, | Tons | 21,749 |
| There was shipped from Philadelphia, on board 2964 vessels, bound for distant ports, | " | 313,838 |
| There has been sold for home consumption (in addition to 26,000 tons of the preceeding year's supply, on hand 1st of January, 1836,) | " | 61,944 |
| Allowance for waste, five per cent. | | 20,514 |
| There remains on hand at the Philadelphia landings, 1st January, 1837, | " | 14,000 |
| | Tons | 432,045 |
| The amount of toll received on Anthracite coal, | | $399,472 59 |
| Amount on all other articles, | | 123,160 67 |
| Total amount of toll received in 1836, | | $522,632 26 |
| Of which there was from the ascending trade, | | $76,258 29 |
| And from the descending trade, | | 446,375 06 |

| | | |
|---|---|---|
| The tonnage of the ascending trade, 61,079<br>The descending, 570,094 | Tons | 631,173 |

The number of boats passed through Fair Mount Locks in 1836, were as follows:

| | |
|---|---|
| Descending boats, laden with Anthracite coal, | 9054 |
| Laden with produce, limestone, &c., | 3225 |
| Ascending boats, laden with merchandize, | 4688 |
| Empty, | 7512 |
| Boats | 24,479 |

Of the ascending boats, 2041 were bound for the Union Canal, on which the toll amounted to $37,989 70

And the ascending toll, 32,225 55

$70,215 25

| | |
|---|---|
| The rents received in 1836, from real estate, ground rents, and water rents, amount to, | $16,328 85 |
| And the arrears uncollected, are | 4,515 37 |
| The estimated income for 1837, from rents, is | 18,743 40 |

The following improvements have been made since the last Report, at points where much delay has been experienced, which will be found highly beneficial in facilitating the trade.

One new cut stone Lock at Bridsborough two new cut stone Locks below the Tunnel; in Schuylkill county there yet remains some embankment to be made at this point, which will be finished before the commencement of the spring business.

Several new substantial Tollhouses have been put up, where the old temporary buildings were scarcely tentable.

The old set of locks at Manayunk, which were much decayed, have been rebuilt, and other important improvements at this point, have also been made.

The towingpaths have been raised in many sections, and covered with hard materials. The channels have been cleared of obstructions, so that boats carrying from fifty to sixty tons pass freely.

The Mountain Dam and one at the head of the Duncan canal, have both been substantially strengthened by log cribbing, filled with stone.

The Norristown Dam, one of the oldest on the line, built upon a gravel foundation, with a sheeting of logs to prevent its being undermined, had during the heavy ice freshet of March last, sustained considerable damage by the sheeting timbers being cut off by ice, and otherwise much injured, this was temporarily repaired by a large quantity of stone thrown around the injured part; to attempt a thorough repair of this important Dam, in such manner as to give confidence in its stability, under the circumstances of its construction, was considered by the Coard of Managers as impracticable; it was therefore determined to commence building an entire new one, which was located eight feet down the stream from the old Dam. Four hundred and twenty feet of this have been finished in the most substantial manner, based upon the rock. The old Dam remained entire as a backing, the intermediate space between them, has been pile planked, filled solid to the top, made entirely tight and covered with timber. The remaining part, being about one half the distance across the river, is intended to be completed the next season, for which the timber is prepared. The expense of this work has been heavy, in consequence of the depth of excavation, necessary to obtain a permanent rock foundation; a part of which has been charged to the contingent fund, and the balance to current expenses.

A second reservoir on Tumbling run (an active stream near the head of the navigation,) which had been commenced in 1835, has been finished in the most substantial manner.

The dimensions of the two reservoirs, when full of water, are as follows:

No. 1 measures, on the surface, 28 acres, contains 23,158,152 cubic feet of water, and is 41 feet 8 inches in depth over the iron conduit pipes, at the Mound dam.

No. 2 measures, on the surface, 30 acres, contains thirty millions of cubic feet of water, and is 52 feet 10 inches in depth over the pipes. Each reservoir has two ranges of iron pipes, of twelve inches diameter, passing through the base of the dam, for the purpose of supplying the navigation, which are opened and shut with perfect facility, by iron valves, as occasion requires; the surplus waters run off through a short canal, cut out of the solid rock, on the side of the mountain, several feet below the top of the embankments, to prevent injury by heavy freshets.

The great utility of these reservoirs has been fully manifested the current year; for about two months during the period of active business, the streams near the head of the navigation were remarkably low, and afforded but a limited supply of water, for the accommodation of so extended a trade. The deficiency was fully made up by the aid obtained from these reservoirs, and we have much satisfaction in stating, that the water was so judiciously applied, as to leave at least one half the stock held in reserve.

At the canal immediately above Reading, much inconvenience has been experienced by the operations of an extensive grist mill, which required so heavy draft of water from it, as frequently to interrupt and annoy the free passage of boats through the Locks. To remedy this evil, it was found necessary to purchase the mill, for which, together with fifteen acres of land, a dwelling and other buidings connected therewith, $18,000 have been paid. The water power for the use of this mill can now be so arranged, as to obviate the difficulties.

The Company being in want of timber, for the use of the works, have purchased a tract of land near the canal, in Schuylkill county, well stocked with white oak and other materials suited to their improvements; it contains 378 acres, and cost $3,800. When the timber shall have been exhausted, the land will be sold, and it is believed that the wants of the Company will thus be

supplied upon better terms than in any other way.

The expediency of doubling the Locks for the purpose of affording as far as practicable a separate ascending and descending navigation, has heretofore been carried into execution at such points as were found by experience to present the greatest delay in the passage of boats; there yet remain two or three places at which any material inconvenience occurs, and *only one* on the whole line where *combined locks* remain tobe doubled. To improve these as early as possible, orders have been given for the preparation of a large quantity of cut stone to be delivered at the several points to be improved, and in readiness to commence building additional locks, as early the next season as the weather will permit; and it is intended to progress,as fast as possible,further toimprove the capacity of the works, and to afford that additional accommodation to the increasing trade, which its importance and duty to the public interest rquire.

At the last annual meeting of the stockholders, an ordinance was passed authorizing a loan of $200,000, at a rate of interest not exceeding 5 per cent. a year, for the purpose of enabling the Board of Managers further to improve and increase the capacity of the works under their charge; towards the accomplishment of this desirable object, and the payments for real estate purchased, there has been expended, during the past year, $105,583 14, for the payment of which only $44,026 94 of the loan thus authorised, have been negotiated. The unprecedented scarcity of money, and the consequent rise of the rate of interest in the money market, rendered a further sale impracticable, without increasing the rate of interest prescribed, or of selling the loan below par; the Board of Managers not feeling authorised to adopt either of these alternatives was compelled to borrow temporarily from the Toll Fund, the sum of $61,556 21, to supply the deficiency. This amount it will be necessary to return to its proper account, by a further sale of the loan, on such terms as the stockholders may authorise.

The navigation of our canals was closed by ice, much earlier this season than usual, and caused considerable disappointment, as it put an entire stop to business, at a time when in its full tide of operation.

On closing the works for the season, they were found to be in as good order as usual, or as could have been expected, after a season of active trade; but on a line of improvement extending 108 miles, with 34 dams and pools, 27 canals, and towingpaths the whole extent, with 117 locks, forming the original navigation, and overcoming a fall of 610 feet, also 45 new cut stone twin locks, built for the purpose or increasing the means of passing the boats through withou detention, many repairs will necessarily b required. For the accomplishment of these repairs, preparations have already been made, that the whole may be finished and ready in time for the opening of business next spring, as early as the season will admit.

All which is respectfully submitted.

JOSHUA LIPPINCOTT, *Pres't.*

January 4th, 1837.

STATEMENT OF THE ACCOUNTS OF THE COMPANY, JANUARY 1, 1837.

(B) DR.

| | | |
|---|---|---|
| Capital Stock, 33,312 shares, a $50 | | $1,665,600 00 |
| Permanent Loans, | | 1,538,626 93 |
| Bond payable, given for Damages, | | 8,000 00 |
| Temporary Loan from the Toll Fund, | | 61,556 21 |
| | | $3,273,783 14 |
| Balance of Income and Expense account,as per statement of dividend committee, February 1836, | | $10,806 77 |
| Tolls received for 1836, | | 522,633 26 |
| Rents received in 1836, | | 16,328 85 |
| Contingent Fund, | | 3,353 02 |
| Individual Accounts, | | 158 36 |
| Unclaimed Interest, | | 4,412 36 |
| Unclaimed Dividends, | | 2,879 00 |
| | | $560,571 62 |

CR.

| | | |
|---|---|---|
| General Charges, cost of the works, | | $2,994,947 23 |
| Do. for damages paid, | | 105,060 91 |
| Do. for Real Estate, | | 159,516 82 |
| | | $3,259,524 96 |
| Bonds Receiveable for Lands sold, | | 14,258 18 |
| | | $3,273,783 14 |
| Temporary Loan, | | 61,556 21 |
| Current expenses, being cost of repairs, salary to officers, locktenders' wages, &c., for the year 1836, | | 102,718 06 |
| Interest on Loans for 1836, | | 77,215 14 |
| Dividend, August last, | | 158,105 34 |
| Individual Accounts, | | 2,590 77 |
| Loans and Stock of the Company, | | 29,625 81 |
| Special Deposite inBank,of unclaimed Interest and Dividends, | | 7,291 36 |
| Cash in Bank, | | 121,468 93 |
| | | $560,571 62 |

C

*Tonnage of articles ascending the river*, 1836.

| | |
|---|---|
| Merchandize, | 22,350 |
| Fish, | 2,793 |
| Salt, | 3,402 |
| Plaster, | 10,518 |
| Grain, | 1,128 |
| Iron, | 3,040 |
| Blooms and Castings, | 444 |
| Limestone, | 2,707 |
| Iron Ore, | 2,280 |
| Bricks, | 666 |
| Porter & Ale, | 72 |
| Lumber, | 1,845 |
| Marble and Stone, | 2,062 |
| Coal, | 3,020 |
| Flour, | 388 |
| Sundries, | 2,292 |
| Burrs, | 124 |
| Clay, | 215 |
| Wood, | 241 |
| Staves, | 280 |
| Sand, | 205 |
| Hides, | 627 |
| Tar & Pitch, | 83 |
| Hemp, | 92 |
| Rails, | 141 |
| Wool, | 134 |
| Tons | 61,079 |

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*Tonnage of articles descending the river*, 1826.

| | |
|---|---|
| Coal, | 432,045 |
| Flour, | 9,403 |
| Whiskey, | 1,971 |
| Lumber, | 12,153 |
| Grain, | 16,267 |
| Iron, | 4,667 |
| Blooms and Castings, | 6,726 |
| Nails, | 2,050 |
| Lime, | 18,629 |
| Limestone, | 44,920 |
| Iron Ore, | 1,851 |
| Butter, | 440 |
| Leather, | 427 |
| Bituminous Coal, | 5,082 |
| Marble, | 348 |
| Stone, | 3,229 |
| Wood, | 2,039 |
| Tobacco, | 779 |
| Bacon and Pork, | 680 |
| Sundries, | 3,387 |
| Bricks, | 164 |
| Wool, | 123 |
| Glass, | 138 |
| Rags, | 103 |
| Staves, | 316 |
| Starch, | 55 |
| Logs, | 188 |
| Lard, | 81 |
| Live Stock, | 174 |
| Shingles, | 1,665 |
| Tons | 570,094 |

WILKINSON'S ALARM.

Sir,—Among the "Notes and Notices" in your 687th Number, I observe one describing an "*alarm-lamp*," said to be invented by a gunsmith of Easingwold, in Yorkshire. I apprehend the writer has made some slight mistake with respect to this invention, which originated with Mr. Wilkinson, the justly celebrated gunsmith of Pall Mall, London.

Having constructed a percussion-lock upon a new principle about fifteen months ago, which I considered applicable to large pieces of ordnance, and knowing Mr. Wilkinson to be the very best authority upon these matters, I obtained an introduction to him. Mr. Wilkinson received me with the utmost politeness; and having examined my new lock, he pointed out, in the kindest manner possible, the reasons why it could not answer the purpose for which I had intended it. He then exhibited and explained to me many curious and ingenious things with which I found him surrounded, and, among other things, he showed me his *new alarm* for the detection of poachers, rick-burners, &c. This alarm consisted of a percussion-lock of a very strong and durable construction, fixed upon a stout post, from which wires were led in various directions over the grounds to be protected, in the same way as the wires of spring-guns used to be. The lock is made to communicate with a rocket or a maroon, or with both. In the event of any of the wires being touched, the lock is discharged, and striking a percussion-cap, ignites the maroon, the audible report of which alarms the persons who are on the look-out; a rocket at the same instant ascends, and remains stationary for five or ten minutes over the spot, throwing down a vivid light, which indicates the situation, and exhibits the progress of the depredators.

Mr. Wilkinson's alarm has been very extensively employed by noblemen and gentlemen for the protection of their property from midnight marauders, and it is the best contrivance for the purpose I ever met with. These alarms are in every way infinitely superior to the inhuman "man-traps and spring-guns," even were they still legal; they are properly described as "being perfectly free from danger to servants or others having the care of them; but calculated when they go off to strike terror into the breast of the most audacious depredator."

I remain, Sir, yours respectfully,

WM. BADDELEY.

London, October 8, 1836.

## VIEW OF PATERSON, NEW-JERSEY.

The village of Paterson, is situated on the Passaic river, in the north-eastern Section of the County of Essex, in the State of New-Jersey, and is about 16 miles by way of the Patterson Railroad in a north-west direction from the city of New-York.

This place has long been a celebrated resort for travellers and parties of pleasure, whose curiosity has been excited to view the magnificent falls on the Passaic, and the romantic scenery of the surrounding country: and within a few years it has attained a more permanent and substantial notoriety from other causes than that of an admiration of the beauties of nature. These causes are its local situation to become a large and populous city and its vast water power which will be first briefly noticed.

1st. The water power afforded by the Falls on the Passaic. This is owned by a company, which was incorporated by the Legislature of New-Jersey, in 1791, under the name of the Society for Establishing Uuseful Manufactures, and extendfrom about $\frac{1}{3}$ of a mile above the "Great Falls," to about $\frac{1}{4}$ a mile below the same, comprising a considerable width of land on both sides the river. At a short distance above the "Great Falls" a substantial dam $4\frac{1}{2}$ feet in height has been constructed across the Passaic which turns a sufficiency of water by means of a canal cut through a solid rock into a spacious basin from whence the water is conducted in such quantities as may be required into three separate canals or raceways, affording a head and fall from each, of about 22 feet. The waters of these canals flow again into the Passaic, and each is a little over $\frac{1}{4}$ of a mile in length, affording sites, in all, for about 70 mills, requring each a cubic foot of water, which is equal to about 25 horse power, and capable of carrying 2500 spindles.

2d. The descent of the Passaic from the lower termination of the Society or Company's grant to tide water, a distance of between 7 and 8 miles, is 37 feet 10 of which is within half a mile of the lower termination of the Company's grant, and by means of a canal would afford a number of valuable sites for hydraulic works of any kind.

3d. The Morris Canal runs near the southern part of the village, and the Canal Company have constructed a basin at the distance of about 100 feet from the upper basin already mentioned, and owned by the Society for Establishing Useful Manufactures. From the former basin to the latter, the descent is $61\frac{1}{2}$ feet, affording 20 mill sites: and here it may be proper to observe, that the canal at this place; has an abundance of water, furnished by means of feeders from Long Pond, situated at about 10 or 12 miles north of this place it is also worthy of notice, that the water flowing from the basin of the Morris Canal, empties into the basin owned by the Society, and can be again used in their canals or raceways.

From the foregoing statement, it will be perceived, that there is sufficient water power at Paterson, and in its vicinity for more than 100 mills, and considering its favorable location and growing importance, a short account of the origin of its growth, progress, present condition, and future prospects, is deemed worthy of notice.

### ORIGIN OF ITS GROWTH AND PROGRESS.

As early as the year 1791, Gen. Alexander Hamilton foresaw the importance in a national point of view, of bringing into active operation, a portion of the resources of the country, by the establishment of domestic manufactures, and not only advocated the measure with his pen, in his celebrated report to Congress upon that subject, but exerted his personal influence among his friends and acquaintances to individually embark in so laudable and patriotic an undertaking; and through his persuasion, a number of gentlemen of wealth, were induced to form an association with a view of testing the principle. During that year (1791,) this association was incorporated by an act of the Legislature of New-Jersey, under the title of "The Society for Establishing Useful Manufactures," with a capital of $1,000,000, and the right to acquire and hold property to the amount of $4,000,000. The act of incorporation is perpetual and was penned by Gen. Hamilton, although he had no interest but that of the public good in the transaction. After making various surveys, the Company in the year 1792, made a purchase of the place already described when they commenced operations. Owing, however, to the inexperience of some, and the competition arising from the introduction of foreign fabrics, similar to those intended to be successfully manufactured here, the association did not prosper. The first factory at this place was erected in 1794, for the purpose of spinning cotton. During the same year, shawls and and other goods manufactured from cotton, were printed, and although the company made strong efforts to sustain the establishment; they were obliged, after an experiment of three four years, to entirely abandon their works, having lost over $50,000 in their operations. The cotton mill was subsequently leased to individuals, who continued, although on a limited scale, to manufacture candlewick and other coarse cotton yarns until the year 1807, when it was accidentally destoyed by fire, and has never since been rebuilt.

In 1811, 12 and 14, several mills were erected, but the business done in them did not prove to be profitable, nor was it till about the year 1824 that the manufacturing establishments of this place were brought into successful operation. Since which they have rapidly increased, as will appear by the following statement, and bid fair to progress in a much greater ratio. And as one evidence of this, may be mentioned the increased value of water privileges, which for one cubic foot,

| | | | |
|---|---|---|---|
| In 1804 was rented at | | $75 00 | a year |
| For 1807 to 10 | " " | 100 00 | " " |
| For 1811 to 15 | " " | 160 00 | " " |

Since which they have gradually risen to $200, 250, 300, 400, 500, and now to 600.

### MANUFACTURING ESTABLISHMENTS.

Seventeen Cotton Mills, in which are over 50,000 spindles employing annually; 1,500 to 2,000 hands, and consuming from 4 to 6,000 pounds of raw cotton.

Four Machine Factories, employing 7 or 800 hands. In these factories, cotton and other machinery are manufactured on an extensive scale.

One extensive establishment for the manufactory of locomotive engines by Messrs. Rogers, Ketchum & Grosvenor.

Two extensive Paper Mills, in one of which are daily manufactured three tons of paper.

One Factory for manufacturing linen duck and bagging. employs about 200 hands, and annually consumes over 500,000 lbs. of flax.

One Sattinet Factory, with a dying establishment connected with it, has about 1,400 spindles, employs from 60 to 80 hands and consumes annually over 100,000 lbs. of wool.

Two Printing and Dying establishments, that do a large business.

Two Bleeching establishments, employing from 20 to 30 hands.

One Saw Mill, with two saw-carriages.

One Patent Fire Arms Factory, being erected, where patent fire arms will be manufactured on an extensive scale.

In the abovementioned factories are annually employed over 3,000 hands, whose wages exceed $500,000.

### MEANS OF INTERCOURSE WITH THE CITY OF NEW-YORK.

The means of intercourse between this place and the city of New-York, are so great, and the travelling so expeditious, that the two places are brought as it were almost into the immediate neighborhood of each other.

1st. The Paterson Railroad extending from this place to Jersey City, a distance of 16 miles. Trips are made to and from these places 4 or 5 times a day, each occupying from an hour to an hour and a quarter.

2d. The Morris Canal, extends from opposite Easton, in the State of Pennsylvania, to Jersey City, a distance of 90 miles, and flows a little south of the compact part of the village. The canal is just completed, and will be of immense importance to this place, as respects the supply of anthracite coal from the mines in Pennsylvania, which will be afforded here in abundance at a cheap rate. Traversing the rich counties of Warren and Morris, in this State, the former of which abounds in excellent timber, and the latter in vast mineral resources, the citizens of this place, will also be supplied with abundance of materials for the purpose of building; and

the day is perhaps not far distant, when the minerals found in the County of Morris will be extensively wrought here.

The distance from Patterson to New-York, by way of the Canal is 24 miles, and generally for nine months in a year, it will afford a cheap conveyance for the transportation of heavy articles.

3d. A company has been incorporated by the Legislature of this State, for the purpose of rendering the Passaic navigable from this place to tide water, a distance of between 7 and 8 miles. The stock has been subscribed for that purpose, and when the work is accomplished, trips will be made in steamboats, from this place to New-York in 4 or 5 hours.

4th. A petition is before the Legislature of the State, for the incorporation of a company to construct a Railroad from this place to the boundary line of the State of New-York, and from thence, if the right can be obtained, to intersect the Erie Railroad in the State of New-York. The distance from Paterson on the contemplated route to the New-York State line is about 14 miles, from thence to the contemplated route of the Erie Railroad is less than half a mile. Should this project go into operation the route to New-York by way of the Erie road would be considerably shortened and the principal transportation of merchandize and passengers from Lake Erie and other places in the State of New-York would pass through this village.

## POPULATION AND PRESENT STATE OF THE VILLAGE.

The population of this village is estimated at about 12,000, a large portion of which is engaged in Manufactures, the remaining portion is divided into Merchants, professional men, and mechanics, such as tailors, shoemakers, house-carpenters, painters, &c., who carry on a respectable business, but on a less extensive scale than that of the large factories. There are 20 pay schools, 13 male and 7 female, an academy, and a free school supported by the town, in which are instructed from 100 to 150 children,—also, a free infant school, in which about 200 children are taught. There are also, 7 Sunday schools under the direction of different religious denominations in which are instructed over 1500 pupils—9 Churches or houses built for religious worship. Viz. 1 Presbyterian, 2 Reformed Dutch, 1 Roman Catholic, 1 Methodist, 1 Episcopalian, 1 Baptist, 1 true Dutch Reformed, and 1 Free Church, a Museum, 2 Banks. There is in Patterson a Mechanics' Society, incorporated by the Legislature for improvement in Science and the Mechanic Arts. This Society have laid the foundation for a library and philosophical apparatus.

There is also a philosophical Society composed of a number of young gentlemen who have associated for literary improvement.—They meet weekly and have collected a respectable library.—Besides these there are several benevolent associations.

The site of the village is generally level, and the streets regularly laid out. It has excellent water and there is not a more healthy location in the United States. Its markets are well supplied by the farmers from the surrounding country, and the demand for their productions has materially enhanced the value of real estate for a number of miles in different directions.

## FUTURE PROSPECTS.

This is a subject not of detail, but affording matter for various opinions. In taking a retrospective view of the United States for the last thirty years in the advancement of wealth, enterprize and improvement, the mind is scarcely competent to imagine what it will be in thirty or forty years to come. Within a few years past a powerful impetus has been given to the enterprize of the country by means of internal improvements, and the establishment of domestic manufactures; and it is now conceded, pretty much, by every one, that these are the great engines which bring into requisition and active operation, the resources of the country, and must be its settled policy. No country is more favorably situated to become a manufacturing nation than that of the United States—the freedom of her institutions, which, with the general diffusion of knowledge, must necessarily bring into active operation the genius and talent of her citizens, her vast mineral resources, and the diversity of the soil and climate are all eminently calculated to favor the policy, and judging from the past, it is thought not to be extravagant, to suppose that in thirty or forty years the United States will become the greatest manufacturing nation in the world. Experience has shown that in all large trading countries it is the interest of different classes of tradesmen to congregate in large cities and such as afford the greatest facilities for the interchange of various commodities and the transaction of business generally.—The same principle will apply to manufacturing establishments, we see it verified in England, which has her Birmingham, her Manchester and her Leeds. And taking into view the local situation of Patterson—its vast water powers, and its contiguity to the great commercial emporium of the United States, is it not reasonable to suppose that this place, in a few years will be to the city of New-York, what Manchester now is to Liverpool.

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# Miscellaneous.

### BRITISH ASSOCIATION.

**From the Journal of the Franklin Institute.**

### TIDE OBSERVATIONS AT LIVERPOOL AND LONDON.

M. Lubbock being called upon to give an account of the recent discussion of tide observations, for which a liberal grant of money had been made by the Association, rose and stated, that through the indefatigable exertions of Mr. Dessiou, considerable progress had been made in the reduction of the observations made at Liverpool by Mr. Hutchinson.

The diurnal inequality of difference between the superior and inferior tide of the same day, which in the Thames was very inconsiderable, if not insensible, was found at Liverpool to amount to more than a foot; a matter upon which the learned gentleman laid considerable stress, as calculated to lead to important practical results. The object of these reductions was to compare the results of theory with these observations, and with those of Mr. Jones and Mr. Russell, made at the port of London. The principal objects of comparison were the heights of the several tides, and the intervals between tide and tide; and these were examined in their relations to the parallax and declination of the Moon and of the Sun, and in reference to local, and what may in one sense be called accidental causes, as storms, &c. Of this latter, one of the most curious, as well as important, is the effect of the pressure of the atmospheric column. The learned gentleman stated, that M. Duassy had ascertained, that at the harbor of Brest a variation of the height of high water was found to take place, which was inversely as the rise or fall of the barometer, and that a fall of the barometer of 0.622 parts of an inch, was found to cause an increase of the height of the tide, equal to 8.78 inches in that port. To confirm this interesting and hitherto unsuspected cause of variation, had been one principal object of the researches of the learned gentleman, and at his request, Mr. Dessiou had calculated the heights and times of high water at Liverpool for the year 1784, and compared them with the heights of the barometer, as recorded by Mr. Hutchinson for the same year; and by a most careful induction, it had turned out that the height of the tide had been on an average increased by one inch for each tenth of an inch that the barometer fell, *cæteris paribus*; but the time was found not to be much, if at all affected. Mr. Lubbock then proceeded to examine the semi-menstrual declination and parallax correction, and stated that the result was a remarkable conformity between the results of Bernouilli's theory, and the results of observations continued for nineteen years at the London Docks. But to render the accordance as exact as it was found to be capable of being, it was necessary to compare the time of the tide, not with that transit of the Moon which immediately preceded it, but with that which took place about five lunar half days. To explain this popularly, the learned gentleman stated, that however paradoxical it might appear to persons not acquainted with the subject, yet true it was, that although the tide depended essentially upon the Moon, yet, any particular tide, as it reaches London, would not be in any way sensibly affected, were the Moon at that instant, or even at its last transit, to have been annihilated; for it was the Moon as it existed fifty or sixty hours before, which caused the disturbance of the ocean, which ultimately resulted in that tide reaching the port of London. The learned gentleman then exhibited several diagrams, in which the variations of the heights of the tide, as resulting from calcula-

tions founded upon the theory, were compared with the results of observations. The general forms of the two curves which represented these two results, corresponded very remarkably; but the curve corresponding to the actual observations, appeared the more angular or broken in its form, for which the learned gentleman satisfactorily accounted, by stating that the observations were neither sufficiently numerous, nor sufficiently precise, from the very manner in which they were taken and recorded, to warrant an expectation of a closer conformity, or a more regular curvature. When it is recollected that the observations are at first written on a slate, and then transferred to the written register, by men otherwise much employed, and whose rank in life was not such as would lead us to expect scrupulous care, it was not to be wondered at, if occasionally an error of transcript should occur, or even if the observation of one transit was set down as belonging to the next. When to tide these circumstances it was added, that the at London was in all probability, if not certainly, made up of two tides, one having already come round the British Islands, meeting the other as it came up the British Channel, it was altogether surprising that the coincidence should be so exact; and it was one among many other valuable results of these investigations, that it was now pretty certain that tide tables constructed for the port of London, by the theory of Bernouilli, would give the height and interval with a precision quite sufficient for all practical purposes, and which might be relied on as sufficiently exact, when due caution was used in their construction, and the necessary and known corrections applied. In conclusion, Mr. Lubbock said, the observations for the port of London had now been continued from the commencement of this century, and those for Liverpool, as we understood, about twenty-five years.

Prof. WHEWELL observed, that as, in the discussion of the relative level of land and sea, the tides of the ocean were an important element, he should preface the remarks upon that subject, which he intended to submit, by making a few observations upon the very valuable communication of his friend Mr. Lubbock. This communication he highly eulogized, and pointed, out to the Section the importance of many of the conclusions, should they prove hereafter to be generally applicable: but he expressed strongly his fears that this would not be the case. Observation had, in the instance of the tides, far outstripped theory, for many reasons, which it would be impossible to detail; but among the most prominent were the complexity of the problem itself involving the astronomical theories both of the Sun and Moon; the masses of these bodies; the motions of disturbed fluids, and local causes tending to alter or modify the general geographical effect of the great tide wave at any particular place. It was upon a careful review of these considerations, that he was led to fear that it would be still many years before theory would become so guarded and supported by local observations; as to afford a sufficiently correct guide to be implicitly relied on in these speculations. He instanced the tides of the British Channel, which in consequence of their excessive magnitude afforded magnified representations of the phenomena, by which the deviations become more remarkable. At the port of Bristol the tide rose to a height of fifty feet, while towards the lower part of the Channel they only rose twenty, and along other parts of the coast not quite so high. The most striking of Mr. Lubbock's conclusions was that by which it appeared that the ocean assumed the form of the spheroid of equilibrium, according to the theory of Bernoiulli, but at five transits of the Moon preceding the tide itself. By the calculations of Mr. Bent, however, it would appear, that although the observed laws of the tides at Bristol might be made to agree with Bernouilli's theory of equilibrium tides, by referring them to a certain anterior transit,—so far as the changes due to parallax were concerned, as also as far as those due to declination were concerned,—yet it turned out that this anterior period itself was not the same for parallax as for declination. The two series of changes have not therefore a common origin or a epoch; so that in fact there is no anterior period which would give theoretical tides agreeing with observed tides; and, therefore, at least the Bristol tides do not at present appear to confirm the result obtained by Mr. Lubbock from the London tides. The learned gentleman then illustrated these views by diagrams, by the aid of which he explained to the Section the luni-tidal intervals, and the curve of semi-menstrual inequality—(this latter term, and the doctrine connected with it, was introduced into the subject of the tides by the learned gentleman himself, and, as is admitted by all acquainted with the subject, with the most valuable result.)

RELATIVE LEVEL OF LAND AND SEA. Prof. WHEWELL then proceeded to give an account of the proceedings of the committee appointed to fix the relative level of land and sea, with a view to ascertain its permanence, or the contrary. He observed, that the committee had not taken any active, practical steps for the important purpose for which they were appointed, because they had met with many unexpected difficulties requiring much consideration. It was, however, intended to appoint a committee for the same purposes, who should be furnished with instructions founded upon the views at which the former committee had by their labors and experience arrived. One method proposed was, that marks should be made along various parts of the coast, which marks should be referred to the level of the sea; but here the inquiry met us in the very outset—what is the proper and precise notion to be attached to the phrase the *level of the sea?* Was it high water-mark, or low water-mark? Was it at the level of the mean tide, which recent researches seemed to establish? In hydrographical subjects the level of the sea was taken from low water, and this, although in many respects inconvenient, could not yet be dispensed with, for many reasons, one of which he might glance at—that by its adoption, shoals which were dry at low water, were capable of being represented upon the maps as well as the land. The second method proposed appeared to the learned Professor to be the one from which the most important and conclusive results were to be expected. It consisted in accurately leveling, by land survey, lines in various directions, and by permanently fixing, in various places, numerous marks of similar levels at the time; by the aid of these marks, at future periods, it could be ascertained whether or not the levels, in particular places, had or had not changed, and thus the question would be settled whether or not the land in particular localities was rising or falling. Still further, by running on those lines, which would have some resemblance to the isothermal lines of Humboldt, as far as the sea coast, and marking their extremities along the coast, a solution would at length be obtained to that most important practical question,—what is the proper or permanent level of the sea at a given place? Until something like this were accomplished, the learned Professor expressed his strong conviction of the hopelessness of expecting any thing like accuracy in many important and even practical cases. As an example, he supposed the question to be the altitude of Dunbury Hill referred to the level of the sea. If that level of the sea were taken at Bristol, where the tide rises, as before stated, fifty feet, the level of low water would differ from the same level on the sea coast at Devonshire, where the sea rises, say eighteen feet; and supposing, as is most probable, the place of the mean tide to be true permanent level by no less a quantity than sixteen feet, which would therefore make that hill to appear sixteen feet higher, upon a hydrographical map constructed by a person taking his level from the coast of Devonshire, than it would appear upon the map of an engineer taking his level at Bristol. In the method proposed, the lines of equal level would run, suppose from Bristol to Ilfracomb in one direction, and from Bristol to Lyme Regis in the other, and by these a common standard of level would soon be obtained for the entire coast.

Professor Sir William Hamilton rose to express the sincere pleasure he felt at the masterly expositions of Mr. Lubbock and Professor Whewell. One conclusion to which Mr. Lubbock had arrived was to him peculiarly interesting, viz., that by which it appeared that the influence of the Moon upon the tides was not manifested in its effects until some time after it had been exerted, for a similar observation had recently been made by Professor Hansteen respecting the mutual disturbances of the planets. Mr. Lubbock rose to say, that the agreement between the results calculated from the theory of Bernouilli and those obtained from actual observation, were much more exact than Professor Whewell seemed to imagine; in truth, so close was the agreement, that they might be said absolutely to agree, since the difference was less than the errors that might be expected to occur in making and recording the observations themselves. Mr. Whewell explained that he wished to confine his observations to the Bristol tides, as these were the observations to which he had particularly turned his attention; and with respect to which, he should be able, at the present meeting, to exhibit diagrams to the section, which he felt confident would amply bear out his assertions respecting the tides. Mr. Lubbock stated, that so near, indeed so exact, had been the coincidence between the

observations made at London and Liverpool, and the theory, that he was so strongly inclined to believe that that coincidence would be found at length to be universal. Professor Stevelly inquired from Mr. Lubbock, whether he did not think it quite possible that local causes might exist, which would be fully capable of producing the deviations from the theory of Bernouilli; as, for instance, in the case of Bristol, so ably insisted upon by Professor Whewell, where the causes of the extraordinary elevation are the land-locking of the tide-wave, as it ascends the narrowing channel, and the reflexions of other tide-waves from several places. Now, particularly in the case of reflex tides, may it not so happen, and does it not, in fact, happen in several places, that they bring the actual tide to a given port at a time very different from that at which the influence of the Moon and Sun, if unimpeded, would cause it to arrive, and thus separate, as Professor Whewell had stated, the origin or epoch of the variations due, suppose to parallax and seclension, and even cause other deviations from Bernouilli's theory?—Mr. Lubbock replied, that unquestionably it might so happen; but, in his opinion, the discussion of a few observations, like those made at Bristol, could not be expected to point out very exactly the origin or epoch of either of the variations of parallax or declination, with sufficient exactness, to furnish secure data for determining that they did not correspond to any one, common previous transit of the Moon.

### JERRARD'S MATHEMATICAL RESEARCHES.

Prof. Sir William Hamilton read his report on Mr. George B. Jerrard's mathematical researches, connected with the general solution of algebraic equations. He wished, in the first place, to inform the Section, that no part of the grant of 80*l.* had been expended, which the Association had so liberally placed at his disposal for the purpose of procuring the assistance of persons competent to verify, by numercial computations, the method of Mr. Jerrard. The reason that he had not deemed it necessary to resort to this expense was, that he had, at a very early period after the meeting of the British Association in Dublin, satisfied his own mind that the method of Mr. Jerrard entirely failed in accomplishing the solution of equations of the fifth and sixth degree; and he trusted that he should be able to lay before the Section, with as much clearness as the abstruse nature of the subject would admit of, the principal steps of a demonstration, which, to the mind of the learned Professor himself, at least, carried a complete conviction, that the method of Mr. Jerrard was not applicable until the equation, as a minor limit, had reached the seventh degree. In order that he might carry the Section fully along with him, Professor Hamilton stated, that it would be necessary to give again a rather detailed account of the peculiarities of the very ingenious notation, devised by Mr. Jerrard, for denoting certain algebraic processes, resorted to in the application of his method. The Professor then proceeded to detail to the Section the several steps of Mr. Jerrard's method, clearly marking the steps previously known to analysts, and such as Mr. Jerrard had the merit of originating. The principal peculiarity of *formulæ* seemed to be, that in an equation, transferred in a particular manner for the purpose of eliminating the co-efficients of the original equation, the co-efficients were so ingeniously obtained as to be entirely independent of the degree of the original equation, and therefore to be of a similar form in all possible equations, the solutions of which were sought. As soon as he had prepared these formulæ the Professor proceeded to demonstrate to the Section, that from the very nature of their connexion with the original equation, they must fail in giving its solution, where it only rose to the fourth dimension, because he showed that this would involve the solution of an equation of the sixth degree, as a preliminary step. Equations, however, of this degree had been long solved, and it was only, therefore, in connexion with the generality of Mr. Jerrard's method, that its failure, as regarded them, was of any consequence. He then proceeded to give a similar demonstration of its failure, as regarded equations of the fifth and of the sixth degree; and during his discussion of this step of his demonstration he took occasion to show that Mr. Jerrard's method had succeeded in reducing equations of the fifth degree to tables of double entry—a discovery, upon the value of which he enlarged considerably, and highly eulogized and complimented the author; insomuch, that he stated that if the method had accomplished nothing but this alone, Mr. Jerrard would have received the congratulations of the scientific world. He then proceeded to show, that unless the index of the equation reached as a minor limit the number seven at least, a certain intermediate equation, concerned in the elimation, would be met with, along with a multiple of it, which, therefore, would not give a number of distinct results sufficient to complete eliminations; but, beyond that degree, he stated that he had satisfied himself that Mr. Jerrard's method would afford solutions of equations, which, even if they should, from their complexity, or other causes, be useless to the practical or merely arithmetical algebraist, yet to those engaged in prosecuting inquiries involving purely symbolic algebra, he felt confident they would afford facilities and general methods of investigation, hitherto almost unlooked for and unexpected.

Mr. Babbage complimented Sir W. Hamilton upon the very lucid exposition which he had given of a subject which he characterized as bordering upon the very extremest limits of human knowledge, and congratulated Mr. Jerrard upon the success with which he had contrived so effectually to distinguish between the symbols of operation and those of quantity, in expressing the results of elimination. Engaged, as it was well known he was, in a branch of practical numerical science, he could not suffer himself to be supposed to look with indifference upon a discovery which, if it should even fail in affording any practically important assistance to his particular branch, must yet be admitted to afford the strongest promise of advantage to the more purely abstract branch of algebraic investigation. Professor Peacock observed, that during the progress of the discussion of this question he had not failed to remark the many advantages which must result to algebra from Mr. Jerrard's method, from the collateral improvements to which the prosecution of his principal object had led, partly in suggesting new, and hitherto unexplored, methods of elimination, and partly by leading to a notation, which so clearly distinguished between the marks of quantity and the observations and changes which were to be resorted to in reference to them; but as to the result itself, he need characterize it no higher, when he added, that it was an advance in the science, which it did not appear that the celebrated La Grange had ever contemplated, and which was not approached by the result of Stchernhausen.

### EXPERIMENTS WITH A VIEW TO DETERMINE THE INTERIOR TEMPERATURE OF THE EARTH.

Prof. Phillips stated that this subject had for a long period engaged the anxious attention of scientific men, both at home and upon the continent; that the most accurate, as well as numerous, experiments indicated a decided elevation of temperature as a more depressed station below the earth's surface was attained; even when the depths descended to were small, this elevation of temperature became large enough to arrest attention; in fact, the temperature of the air, of the water, of the rocks, and of the soil, was found to augment as we descended. But in order to ascertain, if possible, what portion of this heat arose from, or was connected with, an elevated temperature of the internal parts of the globe, as well as to ascertain whether the causes of those were local or universal, and, if possible, to arrive at the law of its distribution, it was deemed a matter of much importance to get rid altogether of the effect of the air's temperature upon the thermometer, as also the action of water, because the sources of the water in mines, &c. must be in most cases entirely beyond the reach of observation. All these circumstances induced the committee appointed by the Association to conduct experiments upon this subject, to take the temperatures of the rocks themselves alone, as the fundamental experiments. With this view, they had no less than thirty-six thermometers made and carefully compared, and, although they well knew that these thermometers, after all the care which had been bestowed upon their construction, were by no means perfect or exact, yet, as their errors had been carefully noted, by a comparison with the standard thermometers of the Royal Societies of London and Edinburgh, and each thermometer numbered, the errors admitted of an easy correction. Many of these thermometers had been already placed under the care of persons adequately instructed to conduct the requisite experiments, and some of them were still in the possession of the committee, who would gladly place them in the charge of any person giving adequate security that they should be applied to the purpose for which they had been procured. The method of using them was this: a hole large enough to receive one of the thermometers, was first drilled into the solid rock, at the bottom of the mine, pit, or other proper place of observation, to the depth of two or three feet at least; into this the thermometer was then introduced and suffered there to remain for a number of days sufficient to ensure the at-

tainment of the temperature of the rock itself. The temperature of the air at the mouth of the pit, and, if possible, the mean temperature of the place, must be observed or obtained. Professor Phillips then stated, that observations had been made in this manner, and with some of these instruments, under the directions of Professor Forbes, at mines in the Lead Hills, in Scotland, and that Professor Forbes would take some early opportunity of bringing these observations more immediately under the notice of the Section; at Newcastle, under the direction of Mr. Briddle; at Wearmouth, under the care of Mr. Anderson; near Manchester, and at Northampton, under the direction of Mr. Hodgkinson; and within a few days, Professor Phillips had been enabled, through the kindness of a friend, te place a thermometer in a deep coal mine at Bedminster, in this immediate vicinity (Bristol.) The results of these observations, so far as they had as yet proceeded, amply confirmed the fact of the increase of temperature in the parts under the earth's surface. As one example, the Professor stated, that in a mine, the perpendicular depth of which, below the surface, was 525 yards, the thermometer in the rock stood at 78°, while the temperature in the open air at the mouth of the mine, varied from 30° to 80°, the mean temperature of the place being 47½°.

Prof. Forbes then gave, from memory, an account of the experiments which he had been the means of instituting in the Lead Hills. Before he did so, however, he wished to state that he had been informed that an artesian well had lately been met with in granite, and he then gave a general description of artesian wells. It was to this effect: that heretofore, in making borings in certain districts through certain alternation of clays, and at length through certain rocks, a supply of water was reached, which rapidly rose through the boring to the surface, and continued to overflow at the top sometimes, as the term fountain indicated, in considerable quantity, and with considerable force. He instanced the artesian wells, or fountains, of the London clay districts; and added, that the temperature of these waters was found universally to increase with the depth of their source beneath the surface of the earth. Heretofore, no such well had been obtained by boring through the granite; and if the account, which he had received, were correct, and of its correctness he entertained little doubt, this would be a matter of considerable interest as well to the geologist as to those who were engaged in scientific pursuits similar to those now under consideration. The observations made under his direction in the Lead Hills, alluded to by Professor Phillips, were almost entirely conducted by Mr. Irvine. These obervations were particularly interesting, from the fact, that the mines, in consequence of a strike among the workmen, had not been worked for many months, and at the same time it most fortunately happened that they were self-drained, that is, by machinery worked by external power, without the aid of either animals or steam. This most fortunate concurrence of favorable circumstances, which could be expected to be met with in so very few instances, at once embarrassed the observations from many sources of error, which, but for this, would have still left considerable doubts of the results being, partially, at least, affected by the heat generated by animals residing and work in the mines, as well as of artificial fires kept up for the purposes of ventilation or of originating power. It was upon these grounds that he perceived the importance of them, but had it not been for the valuable astistance afforded him by Mr. Irvine, who descended into the mine, and placed the thermometer and made the observations, he could scarcely have been as successful as the results already obtained warranted him in hoping he should be. These results, which, of course, had not as yet reached the degree of accuracy which he still looked for, lead to the conclusion that the temperature in that mine increased about 50 of Fahrenheit for a descent of ninety-five fathoms. Professor Stevelly stated, that as practical utility was one of the principal objects of the British Association, he might be permitted to add, that the waters of these wells, in consequence of their temperature being in genereal elevated above the mean temperature of the place at which they delivered their waters, had been applied to the very important practical purpose of freeing machinery of ice in winter, insomuch, that by their instrumentality, machinery, such as water wheels, &c., which had always previously been clogged by ice for a considerable part of the winter, to the great loss of the owner's manufactory, were, by the aid of the waters of these fountains, kept constantly free; while the same water has been, in some instances, conducted through the factory itself, with a view to keep up a uniform and elevated temperature within its walls, thus affording a second and a very valuable practical application.

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Improvement in the Manufacture of Charcoal.—It is well known that there is a very great loss of the carbonaceous portion of the wood in the usual careless way in which charcoal is made; and yet the greater density which the coal acquires by this process, than by that of close distillation, renders its quality very superior for the purpose of reducing ores. This is probably owing to the slower carbonisation which the wood undergoes, by which its molecules are dilated with less rapidity and force

It has been ascertained by experiment, that when the interstices of the wood stacks for charcoal are filled with saw dust and the stack itself covered with it prior to the application of fire, the product of coal is from seven to nine per cent. greater than in the ordinary way. It requires rather more care in the beginning, to get the fire under way, and prevent its going out.

By covering, or mixing the charcoal with tar, before it is put into the furnace with ore, so great a degree of activity is given to the fire, it may be worth the experiment to ascertain whether it would not be good economy to employ the tar of certain districts in this way.—[Journal Conn. Usuelles, Mai. 1836.]

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Process for determining the existence of Sulphurous Acid in Common Hydrochloric Acid. By M. Girardin, Prof. at Rouen.—Put into a glass about half an ounce of the hydrochloric acid to be tried, and add to it 120 to 180 grains of the protochloride of tin (common muriate of tin) very white and not altered by the air, stir it with a rod, and add to it two or three times as much distilled water, and agitate the mixture. If no sulphurous acid be present, nothing appears; the salt dissolves, and the fluid only becomes a little disturbed by the action of the air on the salt; but if the smaller portion of sulphurous acid be present, a cloud is immediately perceived, the acid becomes yellow, and when the distilled water is added, the odor of sulphuretted hydrogen is manifest, a brown appearance ensues, and a powder is deposited. These phenomena are so obvious, that there need not be a moment's hesitation with respect to the sulphurous acid.

Sometimes the brown color does not appear till after some minutes have elapsed.—The more sulphur, the deeper it is. The sulphuretted hydrogen is evident only when the water is added. The yellowish brown powder which subsides is a mixture of sulphuret and peroxide of tin.

This process will detect a hundredth part of sulphurous acid in the hydrochloric.—The method is now practised in the workshops of Rouen.—[Annales de Chim. Mars. 1836.]

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From the Journal of the Franklin Institute.

## Description of a Machine for Milling Coin, invented and introduced into the Mint of the United States; by Franklin Peale.

For the purpose of reducing manual labor, and expediting the processes of the Mint, I was induced, during the latter part of the last year, to make designs for the construction of a Milling machine, to be propelled by the steam power ordinarily employed in the Mint, a model of which I had the honor to exhibit at one of the late conversation meetings of the Institute.—From these designs and model, the machines to which this communication relates, have been most satisfactorily executed in the workshops of the Mint, and are now in full operation in the coining department.

To those who are unacquainted with Mint operations, it will be well to explain, that the operation of milling has for its object, to throw up a thickened edge upon the *blanks* or *planchets*, previous to their being struck, by which means a better border can be given to the coin, with less labor or injury to the dies, it is also, sometimes employed to impress letters or ornaments upon the edge of the coins.

A classical tripod, of cast-iron, supports the table on which are placed the feeding tubes and dies; through the centre of the stand a vertical shaft rises from the room beneath, on the lower end of which is a pulley and its band, furnished with a clutch box, by means of which, movement is given, or arrested, as occasion requires. A winch handle may be applied to the hexagonal top of the axis, for the purpose of adjustment, or to propel the machine, if required, by manual force.

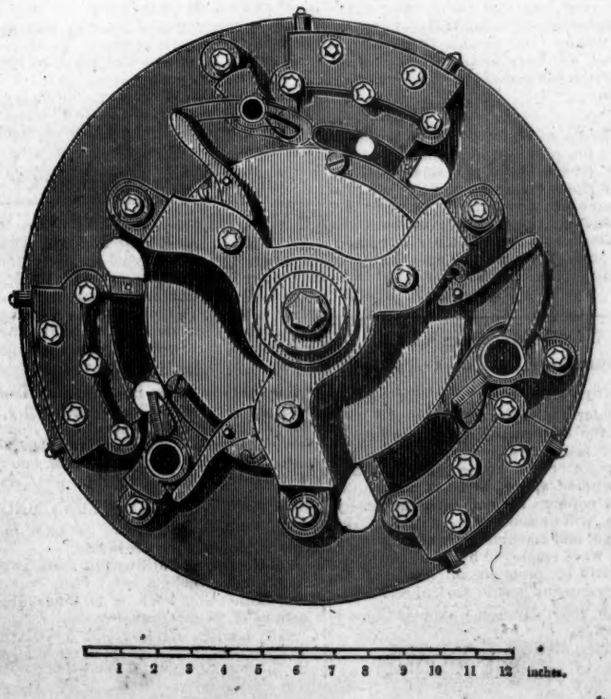
Upon the central axis is a wheel, furnished with two steel dies upon it periphery,

the length of each of which corresponds to the circumference of the coin to be milled; and on the trilateral spaces of the table, are firmly screwed blocks for the outside dies, furnished with the necessary adjusting screws, by means of which the proper degree of pressure is given. Upon the axis immediately above the central wheel, an oval *cam*, or *eccentric*, is placed, for the movement of the feeders; this cam is set in *time* to place the blanks between the dies, when the extremities of the latter are opposite to each other. The feeders are *levers*, moving on centres, placed on each of the three arms of the gallows which supports the upper ends of the axis; which *levers* are kept against the cam by spiral springs, contained within a cavity at the centre of motion. A circular blade, or *pitcher*, as it is technically called, takes the lowest blank from the pile contained in the feeding tubes, and pushes it forward, at the required moment, and a light curved spring prevents its being thrown in advance of the movement. Nearly all of the parts are exhibited in the annexed views.

ELEVATION.

1 2 3 4 5 6 7 8 9 10 11 12

HORIZONTAL VIEW



1 2 3 4 5 6 7 8 9 10 11 12 inches.

This machine is triplicate, and all its feeders may be put in motion at the same time, or any one of them, as occasion may require. Each division is capable of milling 200 pieces, or more, per minute, equal to 12,000 per hour, with the attendance of a boy only; and during this rapid operation, separates any defective pieces that may pass into the tubes. This machine has been in operation since February of the present year, and has given unqualified satisfaction in every respect.

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The Director of the Museum at Kertch, a town in the Crimea, on the Black Sea, lately discovered an ancient tomb of oblong shape, formed of very large hewn stones without any cement, containing a species of coffin in cyprus-wood, inclosing a bronze urn, with the cover firmly soldered on, in which were the remains of burnt bones.—Near the urn were two broken vases of alabaster, which, probably, contained odoriferous essences as used by the Greeks at their funerals. The shape of the urn, which has three handles, and is in very fine preservation, makes it of high interest and value. It is not perhaps possible to fix its precise date, but there is every reason to believe, from the form and construction of the tomb, that it goes as far back as the first colonization of this country by the Greeks, that is, 150 years before Christ.

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A highly curious and valuable antique has recently been discovered at Weston, near Bath. It is of pure silver, hexagonal, of a tapering form, and about 14 inches in length. The top is cornet-shaped, ornamented with acanthus leaves, and was attached probably to the handle. It has been conjectured that this article was employed to hold a torch to light a funeral pile, and to be Roman.—[Bath Herald.]


## Advertisements.

STEPHENSON,

*Builder of a superior style of Passenger Cars for Railroads.*

No. 264 Elizabeth street, near Bleecker street, New-York.

RAILROAD COMPANIES would do well to examine these Cars; a specimen of which may be seen on that part of the New-York and Harlaem Railroad now in operation. J25tf

## FRAME BRIDGES.

THE undersigned, General Agent of Col. S. H. LONG, to build Bridges, or vend the right to others to build, on his Patent Plan, would respectfully inform Railroad and Bridge Corporations, that he is prepared to make contracts to build, and furnish all materials for superstructures of the kind, in any part of the United States, (Maryland excepted.)

Bridges on the above plan are to be seen at the following localities, viz. On the main road leading from Baltimore to Washington, two miles from the former place. Across the Metawamkeag river on the Military road, in Maine. On the national road in Illinois, at sundry points. On the Baltimore and Susquehanna Rrailroad at three points. On the Hudson and Patterson Railroad, in two places. On the Boston and Worcester Railroad, at several points. On the Boston and Providence Railroad, at sundry points. Across the Contoocook river at Henniker, N H. Across the Souhegan river, at Milford, N. H. Across the Connecticut river, at Haverhill, N. H. Across the Contoocook river, at Hancock, N. H. Across the Androscoggin river, at Turner Centre, Maine. Across the Kennebec river, at Waterville, Maine. Across the Genesse river, at Squakiehill, Mount Morris, New-York. Across the White River, at Hartford Vt. Across the Connecticut River, at Lebanon, N. H. Across the mouth of the Broken Straw Creek, Penn. Across the mouth of the Cataraugus Creek, N. Y. A Railroad Bridge diagonally across the Erie, Canal, in the City of Rochester, N. Y. A Railroad Bridge at Upper Still Water, Orono, Maine. This Bridge is 500 feet in length; one of the spans is over 200 feet. It is probably the FIRMEST WOODEN BRIDGE ever built in America.

Notwithstanding his present engagements to build between twenty and thirty Railroad Bridges, and several common bridges, several of which are now in progress of construction, the subscriber will promptly attend to business of the kind to much greater extent and on liberal terms.

MOSES LONG.

Rochester, Jan. 13th, 1837. 4—y

## HARVEY'S PATENT RAILROAD SPIKES.

THE Subscribers are manufacturing and are now prepared to make contracts for the supply of the above article. Samples may be seen and obtained at Messrs. BOORMAN, JOHNSON, AYRES & Co No. 119 Greenwich Street, New-York, or at the Makers in Poughkeepsie, who refer to the subjoined certificates in relation to the article.

HARVEY & KNIGHT.

POUGHKEEPSIE, October 25th, 1836.

The undersigned having attentively examined HARVEY'S PATENT FLANCHED and GROOVED SPIKES is of the opinion, that they are decidedly preferable for Railroads to any other Spikes with which he is acquainted; and shall unhesitatingly recommend their adoption by the different Railroad Companies whose works he has in charge.

BENJ. WRIGHT,
Chief Engineer N. Y. & E. R. R.

NEW-YORK, April 4th, 1836.

Harvey's Flanched and Grooved Spikes are evidently superior for Railroads to those in common use, and I shall recommend their adoption on the roads under my charge if their increased cost over the latter is not greater than some twenty per cent.

JNO. M. FESSENDON, Engineer.

BOSTON, April 26th, 1836. No. 1—6t.

## ALBANY EAGLE AIR FURNACE AND MACHINE SHOP.

WILLIAM V. MANY manufactures to order, IRON CASTINGS for Gearing Mills and Factories of every description

ALSO—Steam Engines and Railroad Castings o every description.

The collection of Patterns for Machinery, is not equalled in the United States. 9—1y

## TO CIVIL ENGINEERS, &c.

E. & G. W. BLUNT, 154 Water-st., corner of Maiden Lane, have recently received an assortment of LEVELS, from different manufacturers, among others from Troughton & Surins, which they warrant of the first quality. Circumferentors, Levelling Staves, Prismatic Compasses, Mathematical Instruments, Books for Engineers, etc., constantly on hand.

One of the above firm is now in England superintending the manufacture of Theodolites, Transit Instruments, etc.—and any orders for Instrumeats, not now on hand, will be forwarded him, and executed promptly. 5—tf

## ARCHIMEDES WORKS.

(100 North Moor street, N. Y.)

NEW-YORK, February 12th, 1836.

THE undersigned begs leave to inform the proprietors of Railroads that they are prepared to furnish all kinds of Machinery for Railroads, Locomotive Engines of any size. Car Wheels, such as are now in successful operation on the Camden and Amboy Railroad none of which have failed—Castings of all kinds Wheels, Axles, and Boxes, furnished at shortest notice

H. R. DUNHAM & CO.

4—vtf

## AMES' CELEBRATED SHOVELS, SPADES, &c.

300 dozens Ames' superior back-strap Shovels
150 do do do plain do
150 do do do cast steel Shovels & Spades
150 do do Gold-mining Shovels
100 do do plated Spades
50 do do socket Shovels and Spades.

Together with Pick Axes, Churn Drills, and Crow Bars (steel pointed,) manufactured from Salisbury refined iron—for sale by the manufacturing agents,

WITHERELL, AMES & CO.
No. 2 Liberty street, New-York.

BACKUS, AMES & CO.
No. 8 State street, Albany

N. B—Also furnished to order, Shapes of every description, made from Salsbury refined Iron v4—tf

## AN ELEGANT STEAM ENGINE AND BOILERS, FOR SALE.

THE Steam Engine and Boilers, belonging to the STEAMBOAT HELEN, and now in the Novelty yard, N Y. Consisting of one Horizontal high pressure Engine, (but may be made to condense with little additional expense) 36 inches diameter, 10 feet stroke, with latest improved Piston Valves, and Metalic packing throughout.

Also, four Tubular Boilers, constructed on the English Locomotive plan, containing a fire surface of over 600 feet in each, or 2500 feet in all—will be sold cheap. All communications addressed (post paid) to the subscriber, will meet with due attention

HENRY BURDEN.

Troy Iron Works, Nov. 15, 1836. 47—tf

## A SPLENDID OPPORTUNITY TO MAKE A FORTUNE.

THE Subscriber having obtained Letters Patent, from the Government of France, granting him the exclusive privilege of manufacturing Horse Shoes, by his newly invented machines, now offers the same for sale on terms which cannot fail to make an independent fortune to any enterprising gentlemen wishing to embark in the same.

The machines are in constant operation at the Troy Iron and Nail Factory, and all that is necessary to satisfy the most incredulous, that it is the most VALUABLE PATENT, ever obtained, either in this or any other country, is to witness the operation which is open for inspection to all during working hours. All letters addressed to the subscriber (post paid) will receive due attention.

Troy Iron Works, HENRY BURDEN.

N. B. Horse Shoes of all sizes will be kept constantly for sale by the principal Iron and Hard-ware Merchants, in the United States, at a small advance above the price of Horse Shoe Iron in Bar. All persons selling the same, are AUTHORISED TO WARRANT EVERY SHOE, made from the BEST REFINED IRON, and any failing to render THE MOST PERFECT SATISFACTION, both as regards workmanship and quality of Iron, will be received back, and the price of the same refunded. H. BURDEN. 47—tf

## NEW ARRANGEMENT.

ROPES FOR INCLINED PLANES OF RAILROADS.

WE the subscribers having formed a co-partnership under the style and firm of Folger & Coleman, for the manufacturing and selling of Ropes for inclined planes of railroads, and for other uses, offer to supply ropes for inclined planes, of any length required without splice, at short notice, the manufacturing of cordage, heretofore carried on by S. S Durfee & Co., will be done by the new firm, the same superintendant and machinery are employed by the new firm that were employed by S. S. Durfee & Co. All orders will be promptly attended to, and ropes will be shipped to any port in the United States.

12th month, 12th, 1836. Hudson, Columbia County State of New-York.

ROBT. C. FOLGER,
33—tf. GEORGE COLEMAN,

## PATENT RAILROAD, SHIP AND BOAT SPIKES.

☞ The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years successful operation, and now almost universal use in the United States, (as well as England, where the subscriber obtained a patent,) are found superior to any ever offered in market.

Railroad Companies may be supplied with Spikes having countersink heads suitable to the holes in iron rails to any amount and on short notice. Almost all the Railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

*** All orders directed to the Agent, Troy, N. Y., will be punctually attended to.

HENRY BURDEN, Agent.

Troy, N. Y., July, 1831.

*** Spikes are kept for sale, at factory prices, by I. & J. Townsend, Albany, and the principal Iron Merchants in Albany and Troy; J. I. Brower, 222 Water street, New-York; A. M. Jones, Philadelphia; T. Janviers, Baltimore; Degrand & Smith, Boston.

P. S.—Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand for his Spikes. (1J23am) H. BURDEN.

## RAILWAY IRON, LOCOMOTIVES, &c.

THE subscribers offer the following articles for sale.

Railway Iron, flat bars, with countersunk holes and naitred joints,

| | | | | | | lbs. | |
|---|---|---|---|---|---|---|---|
| 350 tons | 2½ | by | ½, | 15 ft in length, weighing | | $4\frac{68}{100}$ | per ft. |
| 280 " | 2 | " | ½, | " | " | $3\frac{50}{100}$ | " |
| 70 " | 1½ | " | ½, | " | " | 2½ | " |
| 80 " | 1½ | " | ½, | " | " | $1\frac{25}{100}$ | " |
| 90 " | 1 | " | ½, | " | " | ½ | " |

with Spikes and Splicing Plates adapted thereto. To be sold free of duty to State governments or incorporated companies.

Orders for Pennsylvania Boiler Iron executed.

Rail Road Car and Locomotive Engine Tires, wrought and turned or unturned, ready to be fitted on the wheels, viz 30, 33, 36, 42, 44, 54, and 60 inches diameter.

E. V. Patent Chain Cable Bolts for Railway Car axles, in lengths of 12 feet 6 inches, to 13 feet 2½, 2¾ 3, 3½, 3¾, 3¾, and 3¾ inches diameter.

Chains for Inclined Planes, short and stay links, manufactured from the E. V. Cable Bolts, and proved at the greatest strain.

India Rubber Rope for Inclined Planes, made from New Zealand flax.

Also Patent Hemp Cordage for Inclined Planes, and Canal Towing Lines.

Patent Felt for placing between the iron chair and ston block of Edge Railways.

Every description of Railway Iron, as well as Locomotive Engines, imported at the shortest notice, by the agency of one of our partners, who resides in England for this purpose.

Mr. Solomon W. Roberts, a highly respectable American Engineer, resides in England for the purpose of inspecting all Locomotives, Machinery, Railway Iron &c. ordered through us

A. & G. RALSTON.

28 tf Philadelphia, No. 4, South Front st.

## MACHINE WORKS OF ROGERS, KETCHUM AND GROSVENOR, Paterson, New-Jersey.

The undersigned receive orders for the following articles, manufactured by them, of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch

### RAILROAD WORK.

Locomotive Steam-Engines and Tenders; Driving and other Locomotive Wheels, Axles, Springs and Flange Tires; Car Wheels of cast iron, from a variety of patterns, and Chills; Car Wheels of cast iron, with wrought Tires; Axles of best American refined iron; Springs; Boxes and Bolts for Cars.

### COTTON WOOL AND FLAX MACHINERY,

Of all descriptions and of the most improved Patterns, Style and Workmanship.

Mill Geering and Millwright work generally; Hydraulic and other Presses; Press Screws; Callenders; Lathes and Tools of all kinds, Iron and Brass Castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR
Patterson, New-Jersey, or 60 Wall street, N. Y
51tf